RELATIONSHIPS BETWEEN TRANSPORT, MOBILITY, SUSTAINABLE LIVELIHOODS AND SOCIAL CAPITAL FOR POVERTY REDUCTION

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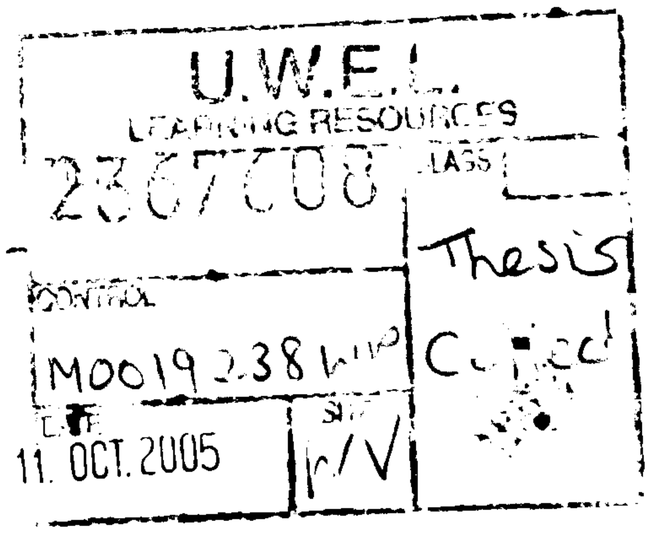

ABSTRACT

The focus of contemporary development discourse has shifted from economic growth to poverty reduction, leading to development of the Millennium Development Goals. An estimated 1.1 billion people in the world live in absolute poverty, 314 million of whom live in Sub-Saharan Africa. Seventy five percent of the world's poor live in rural areas (World Bank, 2004a).

This thesis addresses relationships between accessibility, sustainable livelihoods and social capital, and their role in alleviating poverty by reducing the vulnerability of isolated people.

Isolation and inaccessibility to basic needs and services are a cause and symptom of rural poverty. Transport (including infrastructure and means of transport) and mobility (the precondition for people's physical movement) facilitate accessibility and bring people to services and services to people.

Transport is nested within a complex mix of livelihood issues that affect mobility and access, including assets and coping strategies. Isolation can increase vulnerability to risk, through an absence of knowledge and communication among poor people, such that external shocks become difficult to manage and can perpetuate the poverty cycle. Social capital provides kinship and friendship resources for managing vulnerability and risk. Transport is a key agency by which social networks can be supported.

Drawing on findings from participatory case studies in Zambia, Cameroon and Kenya, the thesis investigates how accessibility, sustainable livelihoods and social capital can be considered collectively by development practitioners to generate measurable improvements in access to basic needs and services. Social capital provides a catalyst for personal mobility and service delivery in the absence of conventionally measured economic benefits. Without the social capital argument the reasons for maintaining rural transport infrastructure and services remain weak. This thesis attempts to break down the boundaries between sociologists, economists and engineers, whose pursuit of development goals has traditionally been in isolation from one another. The thesis suggests that the transport sector move from a position of 'isolation' and finds clear interfaces with other sectors delivering on poverty reduction.

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ASIST	Advisory Support, Information Services and Training
BCC	Burlington County College
BCID	Bradford Centre for International Development
BESSIP	Basic Education Sub-Sector Investment Programme (Zambia)
CBA	Cost Benefit Analysis
CIA	Central Intelligence Agency
CIS	Commonwealth of Independent States
COTCOS	Co-operative Technologies for Complex Work Settings
CTI	Community Transport Infrastructure
CUSA	Credit Union and Savings Association (Zambia)
DAC	Development Assistance Committee
DDC	District Development Committee (Kenya)
DEFRA	Department for Environment, Food and Rural Affairs
DETR	Department of the Environment, Transport and the Regions
DFID	Department for International Development
DFRD	District Focus for Rural Development (Kenya)
DO	District Officer (Kenya)
EAAE	European Association of Agricultural Economists
EU	European Union
FCFA	Communauté Africaine Financière Franc (Cameroon)
FGD	Focus Group Discussion
FRA	Food Reserve Agency (Zambia)
GDP	Gross Domestic Product
GIS	Geographic Information Systems
GoK	Government of Kenya
GoZ	Government of Zambia
HDI	Human Development Index
HDM	Highway Development and Management Model
HIPC	Highly Indebted Poor Country
HIV	Human Immuno-deficiency Virus
HPI	Human Poverty Index
ICT	Information and Communications Technology

IDA	International Development Agency
IDL	In Development Ltd
IDS	Institute of Development Studies
IIED	International Institute for Environment and Development
ILO	International Labour Organization
IMF	International Monetary Fund
IMT	Intermediate Means of Transport
IRAP	Integrated Rural Accessibility Planning
ISEW	Index of Sustainable Economic Welfare
ITDG	Intermediate Technology Development Group
KENDAT	Kenya Network for Draught Animal Technology (Kenya)
LEEP	Livelihood Enhancement through Empowerment and Participation (Zambia)
LEP	Labour-intensive, Environmentally-friendly and Participatory
LSMS	Living Standards Measurement Study
MAFF	Ministry of Agriculture, Food and Fisheries (Zambia)
MDG	Millennium Development Goals
MMD	Movement for Multi-party Democracy (Zambia)
MONDEP	Moneragala Integrated Rural Development Programme
NCU	Northern Co-operative Union (Zambia)
NGO	Non-government Organisation
NPV	Net Present Value
NR	Natural Resources
OECD	Organisation for Economic Co-operation and Development
ORFRTD	Orissa Forum for Rural Transport and Development
PA	Participatory Appraisal
PIP	Policies, Institutions and Processes
PPP	Public Private Partnership
PRA	Participatory Rural Appraisal
PRSP	Poverty Reduction Strategy Paper
PT	Proyecto Tequisquiapan
PTA	Parent Teacher Association
RED	Roads Economic Decision Model
RHC	Rural Health Centre
RIDP	Rural Infrastructure Development Project
ROADSIP	Road Sector Investment Programme (Zambia)

ROSCA	Rotating Savings and Credit Activities (Kenya)
RRA	Rapid Rural Appraisal
RTS	Rural Transport Services
SAFS	School of Aquatic and Fishery Sciences
SAP	Structural Adjustment Policy
SDP	Smallholder Development Programme (Zambia)
SD SCOPE	Social Development Systems for Co-ordinated Poverty Eradication
SL	Sustainable Livelihoods
SLA	Sustainable Livelihoods Approaches
SLAM	Sustainable Livelihoods, Mobility and Access Needs
SLIM	Sustainable Livelihoods Indicator Model
SOWEDA	Southwest Development Authority (Cameroon)
SRP	Social Recovery Project (Zambia)
SSI	Semi-Structured Interviews
STI	Sexually Transmitted Infections
SWAp	Sector Wide Approach
TDAU	Technical Development Advisory Unit (Zambia)
TRL	Transport Research Laboratory
UBZ	United Bus Company of Zambia (Zambia)
UK	United Kingdom
UNCED	United Nations Conference on Environment and Development
UNCHS	United Nations Human Settlements Programme
UNDP	United Nations Development Programme
UNESA	United Nations Department of Economic and Social Affairs
UNESCO	United Nations Educational, Scientific and Cultural Organization
USAID	United States Agency for International Development
WSSD	World Summit for Sustainable Development
ZAMSIF	Zambian Social Investment Fund (Zambia)
ZCCM	Zambia Consolidated Copper Mines (Zambia)

EXCHANGE RATES (UNITED STATES DOLLAR)

Exchange rates at the time of the research		**Nominal exchange rates in August 2004**	
Zambia Kwacha	2,745	Zambia Kwacha	4,745
Cameroon FCFA	740	Cameroon FCFA	530
Kenya Shilling	79	Kenya Shilling	80

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CHAPTER 1: INTRODUCTION

This thesis addresses relationships between accessibility, sustainable livelihoods and social capital and their role in alleviating poverty, by reducing vulnerability of isolated people.

The research, informed by theory and practice, was motivated by ideas emerging from the researcher's occupation as a social development advisor for the Transport Research Laboratory (TRL), researching the viability of transport solutions for poverty reduction. An opportunity to utilise case study data in parallel with a UK Department for International Development (DFID) funded research project, gave further impetus to research proposal preparations.

The three year DFID Knowledge and Research project '*The Policy Toolkit for Increased Rural Mobility'* began in 1999 with the purpose of producing a working framework and procedures for identifying measures and policies to increase rural mobility in Sub-Saharan Africa. As the project progressed, it became apparent that its underlying research concepts were robust enough to develop a parallel piece of academic research. In particular, the project objectives were to promote a sustainable improvement in rural transport through adoption of a livelihoods focused 'toolkit' drawing on participatory field studies. This provided the stimulus to investigate the transport sector from a sustainable livelihoods perspective supported by the adoption of participatory research methods.

When this research began in 2000, the key research question was developed to correspond with the on-going DFID project: 'How can Sustainable Livelihoods Approaches be utilised in rural transport planning?' This has evolved over the course of the study to reflect the changing development discourse. Macro-scale externalities have influenced a shift in development paradigms, including globalisation, the introduction of Poverty Reduction Strategy Papers (PRSPs) and the drive towards decentralisation and achievement of the Millennium Development Goals (MDGs). These have shaped the development of the principle research questions that underline this study, the focus of which is on relationships between a sub-set of paradigms: sustainable livelihoods, social capital and transport. This thesis endeavours to address these three key areas of

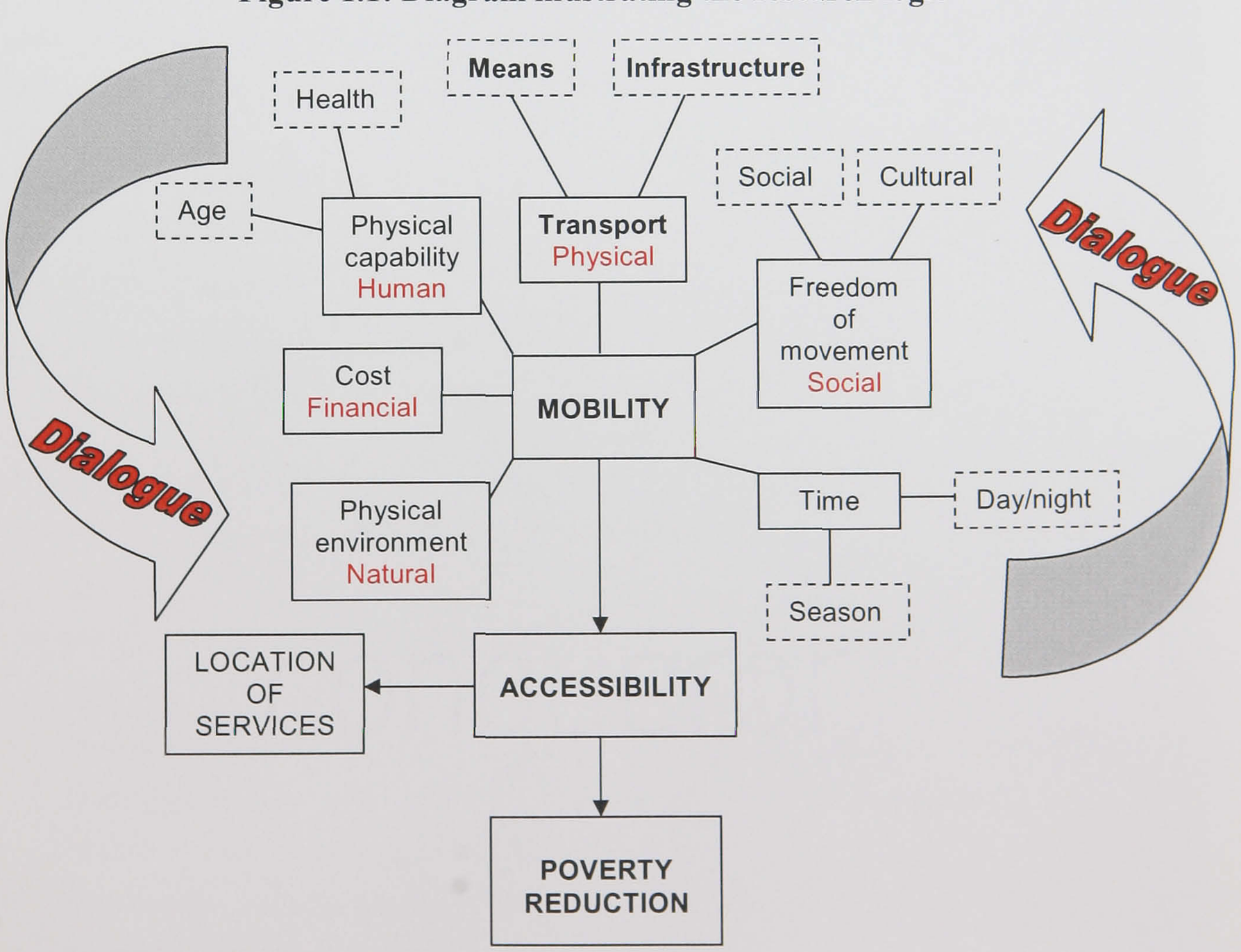
traditional and contemporary development discourse in parallel by challenging the relationships between them, and hence contributing to the continuing policy debate.

The purpose of the research is to investigate accessibility,[1] Sustainable Livelihoods Approaches and social capital in relation to policy, strategy and practice.

The research culminating in the thesis has been based on these principle research questions:

1. What are the relationships between accessibility, Sustainable Livelihoods Approaches and social capital?
2. In what way do accessibility, Sustainable Livelihoods Approaches and social capital influence one another to add value to poverty reduction approaches?
3. How can social capital help people act effectively to deflect shocks and stresses?
4. Is mobility a significant variable in accounting for the extent of social interaction?
5. In what way can transport interventions enhance poor people's access and inclusion in social capital networks?

Figure 1.1: Diagram illustrating the research logic



[1] Transport and mobility can be considered a sub-set of accessibility.

The logic of the research is illustrated in Figure 1.1. It shows accessibility as one aspect of poverty reduction approaches. Mobility and location of services can be considered determinants of accessibility. Factors that influence mobility (physical environment, cost, capability, transport etc) include resources that denote capital assets (natural, financial, human, physical and social) featured in Sustainable Livelihoods Approaches (highlighted in red). These resources can be defined by other elements such as the means and infrastructure that constitute transport. All of these elements exist within an on-going development discourse informed by dialogue between practitioners (illustrated by the arrows).

Some definitions of the key terms, as used in the thesis, are provided in Box 1.1:

Box 1.1: Definition of terms

Accessibility: Denotes the "ability and ease of reaching various destinations, or places offering opportunities for a desired activity" (Creightney, 1993, p.17). Also describes physical proximity, and people's ability to utilise an asset (Bryceson *et al*, 2003).

Mobility: A measure of the 'human agency' with which people choose to move themselves and their goods around, dependent on the performance of the transport system available and characteristics of the individual (Bryceson *et al*, 2003).

Transport: Providing the physical means to facilitate movement

- Infrastructure: roads, tracks, paths and structures, upon which transport modes travel.
- Means of transport: means of conveyance for people and goods, motorised and non-motorised modes of transport, 'Intermediate Means of Transport' (IMT) including headloading, bicycles, animal draught, handcarts, motorbikes and power tillers.

The rural poor: A generic term that encompasses the complexities of absolute and relative poverty in a rural context (World Bank, 1990; World Bank, 2000; DFID, 2001a):

- The 'absolute' poverty line is taken as the income necessary to satisfy minimum food-energy (calorific) requirements, which is typically the purchasing power parity dollar-a-day measure.
- 'Relative' poverty constitutes deprivation in well-being and inadequate standards of living, food, housing, education, health, work and social security by households or communities, relative to others. e.g. a household that earns more than $1 US a day may still be 'poor' in terms of discrimination, insecurity and political repression, or material deprivation caused by unemployment.

Sustainable: Resources are sustainable when they can be utilised by present generations and at the same time conserved and enhanced for use by future generations. Refers to environmental, economic, institutional and social sustainability.

Sustainable Livelihoods Approaches: Conceptual approaches comprising stocks and flows, interrelated principles, concepts, tools and guidelines for development and poverty alleviation that are people centred, holistic, participatory, and sustainable. Assets are the human, physical, financial, social and natural resources that people draw upon for a sustainable livelihood.

Isolation: Defined as physical, social or political exclusion. Denotes seclusion from social services and income generating opportunities. Characterised by a remote or peripheral location (Chambers, 1983).

Vulnerability: External factors that make people susceptible to poverty, including trends, shocks, stresses, seasonality and culture. A product of immobility, partly defined by isolation, marginalisation and risk (Chambers, 1983; DFID, 2001b).

Social capital: The social resources upon which people draw in pursuit of livelihoods (Naphapiet and Ghoshal, 1997; Uphoff, 1999):

- 'Cognitive' social capital: includes relationships of trust and confidence, perceptions of family and 'rural home'
- 'Structural' social capital: includes networks, membership of groups, access to wider institutions of society, rural-urban linkages and extended family contacts.

Sections 1.1 and 1.2 address thesis focus and structure, expanding on the theoretical research processes, and the way in which each Chapter is linked to chronicle the research findings.

1.1 Focus of the Research

Two broad methods of logical reasoning can be defined in research (Trochim, 2002):

1. Deductive approaches: 'top-down' approach starting from the general and becoming more specific. Entails first thinking of a theory and then narrowing it down into specific hypotheses, followed by a collection of observations to test and confirm the hypotheses. *Theory →Hypothesis →Observation →Confirmation*
2. Inductive approaches: 'bottom-up' approach moving from specific observations to broader generalisations and theories, and adopting open-ended and exploratory processes. Begins by detecting patterns and trends and formulating tentative

hypotheses that can be explored, resulting in the development of general conclusions or theories. *Observation →Pattern →Tentative hypothesis →Theory*

This research has combined these approaches, although emphasising inductive approaches. It began with a broad research question that provided the entry point into developing an overall research methodology. Subsequently, observations from initial field studies directed the research path, out of which some research questions emerged with a view to contributing to development theory:

Tentative hypothesis →Observation →Pattern →Research questions →Theory

The thesis engages with distinct areas of theory and practice. It is situated in a significant period of time (historical and longitudinal - characterised by the onset of the Millennium Development Goals) and geographical space (constituting remote rural regions of Sub-Saharan Africa) with varying climatic and demographic characteristics.

The researcher has been mindful of practices among sociologists, economists and engineers, whose pursuit of development goals across sectors is traditionally undertaken in isolation from one another. This research has helped break down the boundaries created by the conflicting discourse of these practitioners, through theoretical and practical approaches.

In 'The State of World Rural Poverty', Jazairy *et al* (1992) provide an account of emerging development paradigms which constitute the building blocks of any research in rural development issues. Following the work of Rostow (1960) and colleagues, the dominant development paradigm was that the benefits of economic growth were believed to 'trickle down' to the poor and remove them from poverty, regardless of context specificities and cultural heterogeneity. This over-arching theme in development thinking led to the adoption of *import substitution* in Latin America, *export-led growth* in newly industrialised countries of South East Asia, and even *state-led growth* in some developing countries in the drive for modernisation in the 1960s and 1970s (Jazairy *et al*, 1992).

Following the debt crisis in 1982, the World Bank imposed a policy of structural adjustment (SAPs) as assurance for micro-economic balances, yet these SAPs failed to develop the productive potential of the rural poor (Jazairy *et al*, 1992). Increasingly, the

role of small farm agriculture in achieving economic growth is being recognised, in that it provides labour, capital, food and foreign exchange (Ellis and Biggs, 2001). Indeed, the new development paradigm expounds a 'trickle up' process approach whereby rural producers play an active role in achieving economic growth, while being empowered to make their own decisions and priorities without the imposition of prescriptive blueprints (Mosse *et al*, 1998).

The question for this thesis is "where do rural transport and social development theories fit into this backdrop of economic growth strategies?"

1.2 Structure of the Research

The framework for undertaking this research thesis has comprised an iterative process of Design→Research→Result, with empirical testing of the original research question taking place in Zambia and Cameroon, resulting in a model to define sustainable livelihoods indicators.

The result of the Zambia case study was the subjective application of data onto the asset pentagon featured in the DFID Sustainable Livelihoods Framework. Design of the Cameroon case study was more advanced and took the logical step of applying quantification to the asset pentagon through the creation of a Sustainable Livelihoods Indicator Model (SLIM). Chapter 5 presents the results of the Cameroon case study and introduces the application of SLIM to the Cameroon data. The background to SLIM, its design and development is presented in Chapter 6 as an independent outcome of the research following the Cameroon case study. The research subsequently focused on social trip-making and the chapters follow the order in which the work was undertaken.

The first two case studies were followed by further design and research in Kenya to refine the research questions and hypothesis. Importantly, this led to a more detailed focus on the social capital elements of Sustainable Livelihoods Approaches.

The thesis structure follows this process. Chapter 2 is a review of literature that examines the origins of transport planning and investment in developing countries during the post-war period, including transport infrastructure, rural transport services and intermediate means of transport. It adopts a cross-sectoral perspective of transport

and accessibility to farms and markets, health, education, and access for the poor. It also introduces some of the major paradigm shifts that have taken place since World War II. These include participatory methodologies, Sustainable Livelihoods Approaches, social capital, Millennium Development Goals, Poverty Reduction Strategy Papers and Sector Wide Approaches.

Following an abridged history of international development in the Twentieth Century, Chapter 3 introduces the methodological approaches for undertaking empirical research in Zambia, Cameroon and Kenya. An explanation for the country sampling and location of research areas is given. Qualitative and quantitative methodologies are then explored and a detailed description of survey tools adopted in each case study provided.

Chapters 4 and 5 comprise the Zambia and Cameroon case studies. These adopt a similar format in providing background socio-economic information on the country and specific areas of research, with information on travel and transport in the country. They continue with fieldwork data analysis and interpretation, and report on the accessibility constraints experienced by the rural poor using sustainable livelihoods analysis techniques. More specifically, the Zambia case study explores the transport constraints of poor people and investigates some risk management strategies they adopt for coping with vulnerability. The Cameroon case study facilitated the Sustainable Livelihoods Indicator Model (SLIM) that is tested using field survey data, and discusses the potential for non-transport interventions for increased access to social services.

The creation of the SLIM in Chapter 6 constitutes the result and output of the research undertaken in Cameroon. It offers justification for development of the model; the need for some practitioners (notably engineers) to conceptualise Sustainable Livelihoods Approaches in a quantitative way. It charts some background to modelling and alternative indicators of sustainable development and provides a sample of the SLIM tool, applied to some of the Cameroon data.

Chapter 7 presents Kenya research findings emphasising social capital and the implications of accessibility on social trip-making and maintenance of social networks. It first provides background to the prevailing socio-economic and political situation in the country and field study locations. This is followed by discussion of social capital and characteristics of social networks in Kenya, drawing on communications with

community stakeholders. Some analysis of social trip-making data and the relationship between social capital and mobility is provided to describe the utility of social capital in managing risk and minimising vulnerability.

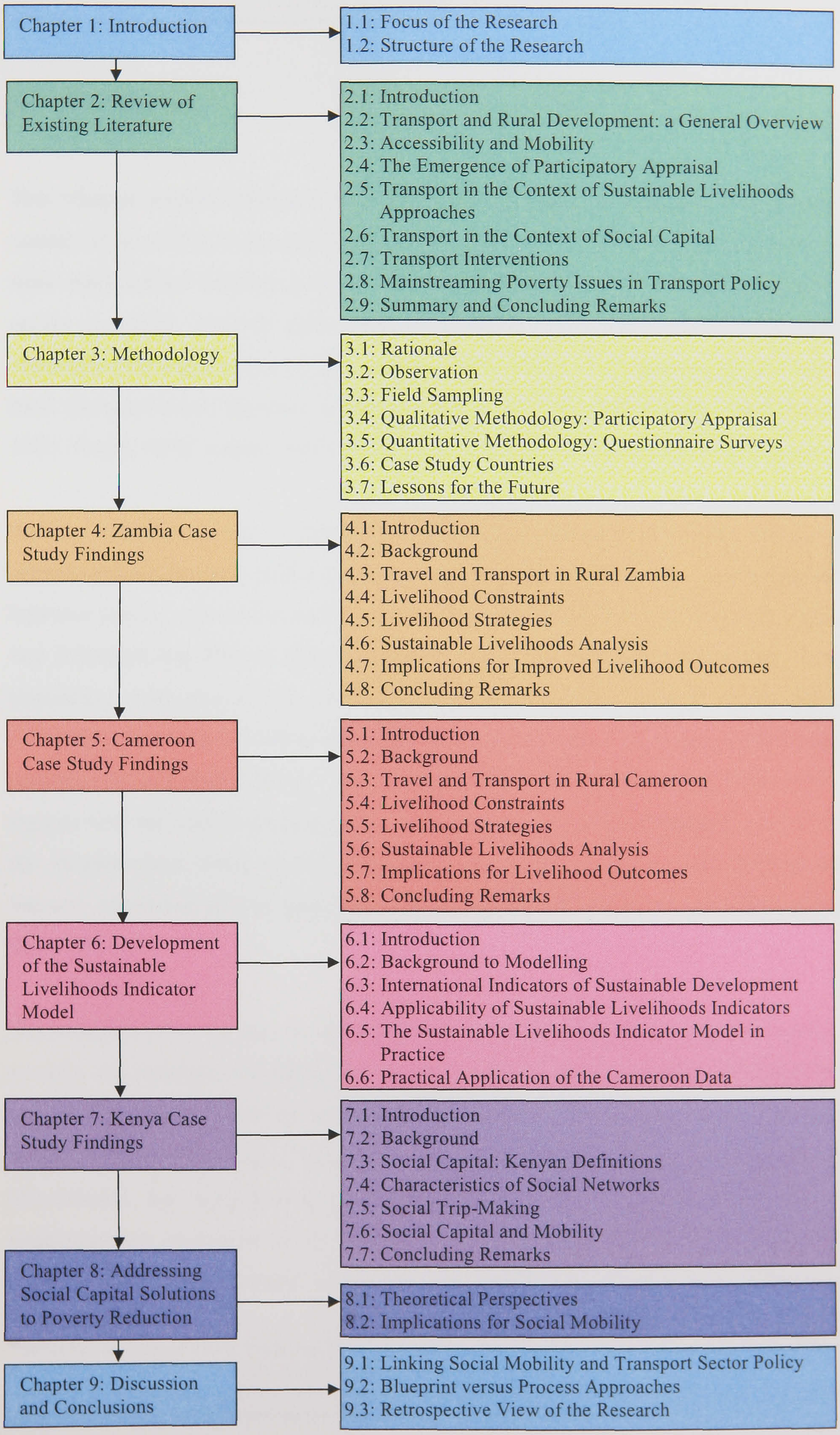
The penultimate Chapter 8, in addressing social capital solutions to poverty reduction, reviews the 'evidence' through consideration of three well-established theories (social development, organisational and systems approaches theory). It regards the discourse of policy and decision-makers and shifting development paradigms in view of these overarching theoretical approaches, and examines why the social capital argument is important for justifying transport service and road infrastructure investment in rural areas.

Finally, the discussion and conclusions in Chapter 9 revisit the research process between 2000 and 2004, along with the research questions and hypothesis. It reflects on the development approaches adopted for the research, and provides a retrospective view of the Zambia and Cameroon case studies, in light of social capital considerations. After reviewing what alternative research avenues the thesis could have pursued and reflections on how the research might otherwise have been undertaken, the thesis concludes with some broad recommendations for future research.

Figure 1.2 provides a schematic representation of the research process contained in Chapters of the thesis.

In Chapter 2, a review of key literature sets the scene for the research investigation, in particular the empirical research design, implementation and analysis.

Figure 1.2: Outline of the thesis structure



CHAPTER 2: REVIEW OF LITERATURE

2.1 Introduction

This Chapter reviews literature on rural transport, sustainable livelihoods and social capital. In providing a general outline of the key issues, the review sketches out the main relationships between poverty on the one hand, and poor transport and lack of access to goods, services and social networks on the other. The Chapter draws especially from experiences in Sub-Saharan Africa where a substantial body of work on rural transport issues has been carried out (Barwell *et al*, 1985; Dawson and Barwell, 1993; Doran, 1996; Sieber, 1997), including the empirical case studies for this research.

Poverty reduction is now a central feature of global development policy. Despite an unprecedented growth in global economic output in the last 50 years, wealth disparities between regions and within countries have risen dramatically. For example in 2002, it was estimated that 20% of global economic output was shared by 85% of the world's population, who live in low and middle income countries[2] (World Bank, 2004b). Currently, more than 1.1 billion people exist on less than one dollar a day in developing countries (World Bank, 2004a). Sub-Saharan Africa, Latin America and South Asia are regions with the world's poorest people. The poor are unevenly distributed, with 44% of the absolute poor living on less than one dollar a day in South Asia, 24% in Sub-Saharan Africa and 23% in East Asia and the Pacific (5% if China is excluded) (World Bank, 2001a).

The renewed focus on poverty reduction has led to new perspectives on definitions of poverty. For example, the parameters for measuring poverty have now broadened from the simplified poverty line and calorific intake, income and consumption as traditionally used by the World Bank.[3] Poverty is now considered to be a "multi-dimensional phenomenon, encompassing (the) inability to satisfy basic needs, lack of control over resources, lack of education and skill, poor health, malnutrition, lack of shelter, poor access to water and sanitation...." (World Bank, 2000). The causes and consequences of

[2] 80% ($26 trillion) of Gross Domestic Product (GDP) in 2002 was generated by high income economies, accounting for just 15% of global population (World Bank, 2004b).
[3] Defined as the purchasing power parity required for minimum calorific consumption, set at 1 US Dollar a day (World Bank, 1990; World Bank, 2000).

poverty tend to reinforce one another through a complex pattern of cyclical inter-relationships.

Howe (2002) categorises the poor into three broad groupings:

1. *Chronic poor*: who due to age – very young or old – illness or disability, have effectively no chance of reducing their poverty by their own efforts. They are most unlikely, except for the very young, to become economically successful and self-sufficient, and basically need focused care or relief
2. *Transient poor*: who often find themselves in poverty due to some sort of natural or (humanly) contrived disaster - a drought, flood, famine, civil unrest or war, etc. If helped for a period of time they may recover and leave the ranks of the poor
3. *Structural poor*: who are what most people conceive of as the majority of the poor. The structurally poor are characterised by a weak asset or capital base, but otherwise are inherently capable.

Transport and access issues are connected to the various dimensions of poverty, which is closely related to personal motorised trip-making as Hine and Rutter (2000) indicate in their poverty groupings related to transport, derived from field studies undertaken in a number of African countries:

1. *The extremely poor:* tend not to travel far, and if they do, only infrequently. Walking is their most important means of transport. They make virtually no use of motorised transport.
2. *The very poor:* will travel more frequently. Limited use may be made of IMTs but walking is still the most important means of transport. Use of motor vehicles will be restricted to carrying harvested produce from the village area. Typically there will be no social use of motorised transport.
3. *The poor:* travel by foot and bicycle will be most common methods of transport. There is likely to be increased ownership of and access to IMTs. Use of motorised transport will be made for longer distance (over 20km) passenger movements. They will also use motor transport to go to hospital or visit relatives.

Hine and Rutter (2000) also indicate the mobility patterns of higher income groups:

4. *The better off:* will make frequent use of motor transport on a regular basis. Access distance to transport services will usually be within half a kilometre. They will have access to bicycles, sometimes motorbikes and an agricultural tractor. Primary school children will still walk to school.

5. *The rich:* will make motorised trips on a daily or weekly basis and will own cars or make intensive use of taxis. Most children will travel to school by motorised vehicle. They will live close to good vehicle access and transport services.

Overall, those who are said to suffer from poverty share at least one of the following characteristics (Maxwell, 1999):

- Income or consumption poverty
- Human (under) development
- Social exclusion
- Ill-being
- (Lack of) capability and functioning
- Vulnerability
- Livelihood unsustainability
- Lack of basic needs
- Relative deprivation

In developing countries, new policy initiatives are being designed to help mobilise resources towards poverty reduction efforts. Many developing countries have adopted Poverty Reduction Strategy Papers (PRSPs) as policy instruments that embody their poverty reduction aspirations. Similarly, many International Development Agencies have put poverty reduction objectives at the heart of their bilateral policies in developing countries (DFID, 1997; 2000). For example, the international community, including the World Bank and DFID, have accepted the challenge to eliminate world poverty in the Twenty First Century, starting with halving the proportion of extreme poverty by 2015 (please refer to Section 2.8.2 for an outline of the Millennium Development Goals).

Arguably, past transport programmes have had ambiguous impact on social development in general and a weak contribution to poverty reduction in particular. Traditionally, transport investment proposals are supported on the basis of their contribution to increased economic efficiency through market expansion and reduced transport costs (Howe, 1997a; 1997b). The sector's effect on (poor) people is assumed to be through the indirect, trickle-down outcomes of economic growth. It is increasingly becoming clear however, that poverty reduction needs more than just economic mechanisms to be effective.

Indeed, Dollar and Kraay (2000) express how surprising it is that there is little systematic cross-country empirical evidence to demonstrate the extent to which the poorest in society benefit from economic growth. The use of economic criteria for prioritising transport sector investment neglects potential social benefits associated with

accessibility interventions (TRL, 2004). The facilitation of motorisation through transport infrastructure bears little relationship to the daily transport requirements of poor people in rural areas. Transport is integral to the provision of and access to basic services; and the combination of an effective transport infrastructure and means of transport are necessary for the delivery of positive livelihood outcomes (Fouracre, 1999).

In a synthesis paper, Dennis (1998) explains that the role of rural transport is now being recognised as fundamental in the social and economic development of rural communities. Indeed, the very notion of "what is transport?" has evolved into "the movement of people and goods by any conceivable means" (Dixon-Fyle, 1998, p.4).

An important element related to the role of transport is the concept of accessibility. Edmonds (1998) defines access as the ability to reach, visit or use. Physical access can be achieved with an effective transport system incorporating adequate infrastructure and transport services. Roads alone cannot solve the travel and transport constraints of poor people (Dawson and Barwell, 1993). Transport constraints on rural livelihoods are not simply a result of poor road condition, but are a culmination of inadequate infrastructure, lack of appropriate and affordable means of transport, remoteness and physical isolation from basic services (Dawson and Barwell, 1993).

Rural transport planning therefore needs to draw on a package of measures that incorporates road and track networks, and an efficient means of transport for the poor including low cost services and Intermediate Means of Transport (IMTs). It is also appropriate to consider alternative non-transport solutions, which include the location of important facilities and services. Above all, there is a need to communicate priority requirements of rural communities to transport decision and policy makers.

This Chapter is structured as follows: Section 2.2 examines the foundations of conventional rural transport policy and practice, and its utility in achieving poverty reduction in developing nations.

Section 2.3 provides an account of the socio-economic impacts of accessibility and mobility, and lack thereof. It describes how transport provides a means of access to essential amenities and income generating opportunities, and the way in which

inaccessibility exacerbates vulnerability among rural communities and the detrimental effects on their livelihoods.

Section 2.4 outlines the principles and concepts of participatory appraisal methodologies, their history against a background of doctrinal decision making, and current concerns over participatory practices that have been criticised for raising expectations and for their routine application.

Section 2.5 explores the theoretical and operational linkages of transport and accessibility in the context of Sustainable Livelihoods Approaches. Section 2.6 uncovers the relationship between accessibility and the social resources (social capital) upon which people draw in pursuit of livelihoods.

Section 2.7 investigates transport interventions used to improve accessibility. It focuses on the provision of infrastructure, rural transport services, IMTs, credit facilities and non-transport interventions, interspersed with empirical examples of transport interventions in operation.

Section 2.8 presents the shift in global development paradigm, from an exclusive focus on economic growth, to poverty reducing development. The section examines the implications of this on the transport sector, and the way in which rural transport issues are gradually becoming mainstreamed into national transport policies.

The Chapter concludes in Section 2.9 with a synopsis of the key points identified from research on rural travel and transport, and its relevance to social capital and Sustainable Livelihoods Approaches.

2.2 Transport and Rural Development: a General Overview

2.2.1 Overview of conventional rural transport theory and policy

In order to present the challenges confronting transport investment programmes in developing countries, there is a need to reflect on some of the assumptions that underpin conventional transport policy and practice, and consequently, their weaknesses when applied to the challenges of poverty reduction.

Traditionally, transport investments are viewed as a technical process though which the cost of physical movement is reduced, resulting in increased economic efficiency. The flow of benefits to the poor is assumed to occur through a 'trickle-down' process (Lewis, 1954), even though it has been argued that there has been little evidence to support this theory in Africa over the last four decades (Howe, 1997a).

Transport planning in developing countries is deeply rooted in the modernisation paradigm, the general theory that began to inform development interventions in developing countries after the Second World War. During this period, the modernisation theory was applied as the main framework for setting development objectives and strategies in developing countries (UNESCO, no date). The purpose of development was assumed to be the pursuit of 'modernity' through the industrialisation of a country economy, along the same lines that the industrial societies had followed (UNESCO, no date; Gannon and Liu, 1997).

The high levels of investment committed to the transport sector in developing countries - mainly for infrastructure projects - were based on the premise that transport was key to installing modern market institutions, to replace the traditional and often subsistence production systems. Whereas the equation of development to modernisation has been questioned and refuted in many fields of development including water, energy and agriculture (Asian Development Bank, 1999; DFID, 2002a), transport planning has persisted as a technocratic and top-down discipline, dominated by economics and engineering considerations (Howe, 1997a).

Prior to the Second World War, Lord Lugard became instrumental in opening up Africa with rail infrastructure during the period of colonisation. For instance, in 1890 he established a British East African Company based in Kampala, Uganda; following which a railway linking the interior to the coast was established (Lugard, 1893). The 1950s saw substantial expansion of transport infrastructure in many developing countries, particularly Sub-Saharan Africa. These efforts were continued in the post independence period in the form of official development assistance, channelled through bilateral and multilateral agencies.

Aid programmes were inspired and modelled along the lines of the Marshall Plan, an American capital injection programme that successfully helped rebuild Europe after the Second World War (George C. Marshall Foundation, 2002). Efforts were mainly

concentrated in urban centres for reasons of economic efficiency and economies of scale.

Early transport theorists were particularly preoccupied with determining the exact contribution that transport made in economic development. Hirschman (1958) was concerned with the issue of whether transport investment should precede or respond to activities resulting from economic growth, and whether it acts as a development initiator or catalyst. He stated that "if the economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions and disequilibria" between 'social overhead capital' (including education, public health, and power and water supply) and 'directly productive activities' (Hirschman, 1958, p.66). Hirschman's work highlighted the wastefulness of speculative practices in transport investment brought about by a belief in its catalytic effect (Howe, 1997a). It further demonstrated that economic investment criteria would target areas that are already in a process of active development, and unlikely to benefit the (rural) poor.

In 1973, Wilson attempted to theorise the links between transport and development after observing the social and economic impacts of large-scale transport investment that had taken place in developing countries in the 1950s and 1960s (Howe, 1997a). He concluded that "transport investment is no more an initiator of growth than any other form of investment or deliberate policy" (Wilson, 1973, p.229). Moreover, the enabling conditions under which investment in highways and roads could yield positive economic and social developments are most likely to materialise where 'prior dynamism' exists. Hence, a region with growing population and productive output would experience substantial socio-economic improvements following investment in transport (Howe, 1997a).

Building on this theorem, Boserup (1981) reiterated the role of population density as a determinant of the development process, and its relationship to the viability of establishing sustainable transport networks. She stated that rail and road networks reduce the cost of long-distance transport and generate larger urban areas, while enabling areas of low population density to evacuate their natural resources to larger markets (Howe, 1997a).

Between the 1950s and late 1970s, the transport sector was a leading consumer of public investment resources. In the late 1970s transport accounted for almost a quarter

of World Bank loans to developing countries, and one-fifth of the International Development Agency (IDA) credits, with half of the loans being used in road transport development (Dawson and Barwell, 1993). Arguably, the Marshall plan was applied without accounting for differences in institutional contexts between developed countries that had undergone economic transformation and developing countries with a large traditional sector.

Since the late 1960s, cost-benefit analysis has been used as the principle tool for road planning and investment in developing countries. Basic access is the minimum level of road transport infrastructure required to sustain socio-economic activity, often defined as the least cost intervention for ensuring reliable, all-season passability for the locally prevailing means of transport (Lebo and Schelling, 2001). In view of state budget constraints, the selection of interventions for basic access requires prioritisation undertaken through an appraisal process. Traditionally, cost-benefit analysis has been adopted for undertaking road investment appraisal, even for roads that carry fewer than fifty vehicles per day (Lebo and Schelling, 2001).

Cost benefit analysis (CBA) accounts for the costs and benefits of an intervention project by ranking alternative interventions on their net present value (NPV). Cost benefit analysis can adopt producer surplus methods (using assumptions of transport investment impact on local agricultural productivity), and consumer surplus methods (using assumptions of transport investment impact on user costs or charges) (Lebo and Schelling, 2001).

A key assumption of consumer surplus approaches is that transport cost reductions will be passed onto consumers through competitive markets.[4] Yet, monopolistic practices of transport syndicates in Africa especially (see Section 5.3, Chapter 5), result in high fares for consumers. Cost benefit analysis can also be used to undertake appraisal of transport service interventions and intermediate means of transport.

Road investment models are used to forecast total life-cycle capital, maintenance, and vehicle running costs related to the road investment depending on the engineering design standards adopted. These include construction, full or partial rehabilitation, and basic access using spot improvements (Hine and Fouracre, 2001). Technology choice

[4] Personal communication with John Hine, Ethiopian Roads Authority, July 2004.

(capital intensive/equipment based or labour based) is also important in determining capital and maintenance costs.

The Highway Development and Management Model (HDM-4) is a software appraisal tool for investing in higher volume road transport infrastructure that supports typically more than 200 vehicles per day (Kerali, 2000). The Roads Economic Decision Model (RED) provides an approach for improving the decision making process for the maintenance of low volume roads (Archondo-Callao, 1999). However, these models are restricted in their practice for remote rural roads, and economic CBA cannot easily cover environmental effects or social benefits of road interventions (Hine and Fouracre, 2001). This limits the utility of CBA in isolated areas where agricultural productivity, population density and traffic volume (preconditions for use of cost benefit analysis) are low. Also, distributional weighting is not taken into account in CBA so cost savings are considered the same for a 'rich' or 'poor' person.[5]

2.2.2 Weaknesses in the conventional approaches

Cost benefit analysis has limited application for the appraisal of low volume roads, not least because it values generated traffic benefits. Generated traffic benefits are traditionally valued as the predicted increase in traffic multiplied by half the difference in transport costs, which is only an effective measure if the market economy works well (TRL, 2004). When there is poor accessibility and a low level of personal trip making, transport cost savings provide an unsatisfactory measure of benefits. A change in accessibility can bring about other more significant benefits such as social service provision. Hence the overall benefits to the rural poor may have little to do with the predicted increase in the volume of trips alone (TRL, 2004).

Broadly, the failure of transport policies to respond to the needs of the majority arise because the theoretical notions that inform policy are largely derived from observations and experiences in countries where structural transformation has already replaced traditional production with market institutions, for example in Europe. Arguably, the process of industrialisation has formed a common basis for theoretical models in transport (Hirschman, 1958; Wilson, 1973; Boserup, 1981).

[5] Personal communication with John Hine, Ethiopian Roads Authority, July 2004.

In spite of this, the road investment models described in Section 2.2.1 have in the past been applied to developing countries with apparent disregard of existing conditions. "The fact that the planning skills and paradigms that are more relevant to industrial countries have been deployed in developing countries has meant that priority has been given to the provision of high mobility, rather than basic accessibility. This has favoured those who are already mobile, particularly vehicle motor users" (World Bank, 1996a, p.31). In this context, transport policies can be seen as having created a polarised disharmony in which modern methods of transport are available only in limited areas and, for many countries, are accessible to a minority of people (Edmonds and Relf, 1985).

It is this disparity between the objectives of conventional transport planning and the needs and constraints of poor people that present a weak basis for using traditional transport models as instruments for sustainable social development and poverty reduction. "Road networks develop from a few primary links, to secondary and then tertiary connections. Similarly pricing structure dictates that private car ownership is first the prerogative of the wealthy that diffuses down through the decreasing income strata of society as the vehicle market enlarges, prices fall and incomes grow. Both phenomena are classic examples of top-down, Lewisian development processes" (Howe, 1997a, p.7). The sparsity of road networks and extremely low levels of vehicle ownership in developing countries highlights the futility of such development approaches on the poorest communities.

2.2.3 Transport in the context of poverty reduction

Discontent with existing transport policies and patterns of investment has led to the evolution of a body of work whose focal point is around issues of social, economic and environmental sustainability. Certainly, transport in the context of growing poverty in developing countries constitutes a main socio-economic sustainability concern confronting the sector.

Poverty has become a key theme in global development priorities. That there is deepening poverty in many parts of developing countries points to the flaws of past development efforts. The transport sector, despite historically being a leading beneficiary of public investments, is now considered a relatively weak contributor to poverty reduction. Over the past decade for example, the proportion of annual World

Bank lending on the transport sector has consistently remained at 12-15% (Gannon and Liu, 1997), a considerable reduction from 25% of loans in the 1970s (see Section 2.2.1). One might consider that past investment in transport has not always succeeded in alleviating isolation experienced by many populations in African countries, measured by improved levels of access and participation in the 'modern' market. Clearly, the progress of social and economic integration that transport was expected to facilitate has been disappointing.

In his seminal publication, 'Rural Development: Putting the Last First', Chambers (1983) firmly links rural poverty to isolation. Barwell[6] explains isolation as follows: "If a rural area cannot be easily reached, if people living in the rural area cannot easily travel, if the flow of goods and services in and out of that area is physically difficult, unreliable or expensive...these are characteristics of isolation." Isolation reduces physical access to vital services such as markets, information sources, social and political networks as well as health and educational services. Access to these services is crucial for improving poor people's livelihoods.

In recent years, some progress has been made in formulating more appropriate approaches to rural transport planning in developing countries. A key feature of the new approach is to move away from a supply to a demand side orientation (Gannon and Liu, 1997; TRL, 2004). By paying more attention to the needs of poor people, it is hoped that a broader menu of policies that respond to the needs of the majority (and in this case the poor) can be formulated.

As part of this process, the notion of user perceptions is now being recognised as an important ingredient of transport planning. In addition, it is acknowledged that a substantial amount of transport activity takes place outside designated road networks. Carapetis and Riverson (1991) point out that most surveys conducted along roadways, usually record only motorised traffic, thus ignoring the large numbers of informal means of transport such as pedestrians, bicycles, pack animals and animal drawn carts. Thus, motorable roads comprise only a small proportion of the rural transport and travel network. There exists an unmeasured network of tracks, paths and trails linking scattered villages with each other and their fields that provide a primary source of household income generation (Dawson and Barwell, 1993; Doran, 1996).

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[6] In an introductory speech at the First Africa Meeting of the Forum for Rural Transport and Development in Lilongwe, Malawi, November 1993.

In general, walking and use of non-motorised transport remains the key means of travel for the majority of poor people in Sub-Saharan Africa. There is potential to improve the flow of benefits from the transport sector in favour of poor people. Transport planning should be geared towards supporting people and their livelihoods by improving their mobility and access to goods and services. The section that follows presents a general view of the meaning and application of mobility and accessibility concepts in rural transport planning.

2.3 Accessibility and Mobility

Basic mobility and ease of access to goods and services are important elements of transport interventions directed at poverty reduction. Accessibility denotes the "ability and ease of reaching various destinations or places offering opportunities for a desired activity" (Creightney, 1993, p.17). Mobility is "a measure of the 'human agency' with which people choose to move themselves and their goods around, dependent on the performance of the transport system available and characteristics of the individual" (Bryceson *et al*, 2003, p.4).

All else being equal, increased mobility improves access. An increase in the speed, convenience or affordability of a mode (e.g. walking, cycling, driving) will increase the mobility of those dependent on that mode, and ultimately access to desired destinations (Ellis, 1997; Ellis and Hine, 1998).

The infrastructure and transport means by which a destination can be reached including paths, tracks and access roads, and motorised and non-motorised vehicles, provide the medium for mobility and accessibility, without which remoteness and isolation can prevail. According to Chambers (1983), isolation contributes to the deprivation trap.

In rural communities, transport activities can be described as those that are required for basic access to goods and services, and those that contribute to income generation. Typically, transport related tasks are required for subsistence, economic and social activities. Studies of Ghana, Tanzania and Zambia indicate that the majority of journeys undertaken in Sub-Saharan Africa for domestic purposes are undertaken in and around the village, and include collection of water and firewood, and trips to the grinding mill for processing of staple cereals (Doran, 1996). Agricultural travel is associated with

crop cultivation, movement of farm inputs, crop harvesting and crop marketing, and constitutes a primary means of income in rural areas of Africa (Doran, 1996). Doran (1996) also reports that travel for access to services including health and education, and for social purposes, tends to be undertaken inside and outside the village vicinity.

In addition, trips are made for social purposes including to places of worship, shopping for consumer goods, visiting friends and relatives and leisure activities. The case studies undertaken for this research indicate that these activities are often dependent on time and capital availability and are prioritised on the basis of perceived value. Hence a household may forgo new clothes in order to pay for a visit to relatives. The Kenya case study found that 'social' trip-making of this nature may not provide any immediate financial returns, but social networks provide a long-term, sustainable safeguard mechanism that could be activated during periods of adversity.

In the main, domestic travel is often considered most important and is undertaken most frequently because the provision of food, water, fire and shelter are essential for survival and cannot be substituted for other non-essential goods. Trip-making within and around rural villages usually takes place on foot. Loads of up to 30kg or more are usually carried on the head or back, and can be transported sometimes between 15-20km a day (with varying frequency of individual trips of between 2-5km for water and firewood) (Dawson and Barwell, 1993; Doran, 1996; Ellis, 1997).

2.3.1 Access to farms and markets

Trips to farms are made regularly on foot. Agricultural marketing however, usually requires the transport of produce from farm to market, which can incur motorised transport costs (Ellis and Hine, 1998). Many farmers are willing to pay for transport to market because the outcome of the trip will be income generation from the sale of produce.

There are often considerable trade-offs made in rural marketing. The cost of evacuating produce to market can be prohibitive both in terms of the transport service fare and the time cost, a factor that is exacerbated by the poor road condition and inflated transport costs that are inherent in low density farming regions (Ellis and Hine, 1998). For this reason, farmers often trade at the farm-gate to avoid the cost of taking small loads to

market, which can be a high-risk exercise, particularly for perishable goods (Hine *et al*. 1983).

Substantial economies of scale in transport and food marketing can generally only be realised by the largest farmers, or by traders. Through collusion, and by taking advantage of a captive market, traders often exploit rural farmers by paying less than the market rate for produce (Hine *et al*, 1983). Indeed in some of the more remote parts of Sub-Saharan Africa (e.g. Northern Zambia), harvests are sometimes sold through barter, a practice which reduces the capability for accumulating *financial* capital, but has the potential for forging social relationships and hence strengthening *social* capital (see Section 4.5, Chapter 4).

However, physical infrastructure (including road networks, transport and storage) is only one factor affecting the efficacy of the marketing process. Market relations and access to market information is equally important. Information on market prices helps farmers maximise their income and negates the need for travel to the market. Yet, in reality physical access to markets, or lack thereof, has a critical impact on producer prices, causing farmers to revert to growing subsistence crops or to diversify altogether and pursue non-agricultural income generating activities (Bryceson, 1999).

Bryceson (1999) documents an increasing trend in 'de-agrarianisation', a long-term process where rural farmers in Sub-Saharan Africa have been diversifying their income with non-agricultural activities including beer brewing, carpentry, metal working, mineral excavation, pottery, tailoring and trading. This trend in occupational diversification has occurred following a contraction of urban employment opportunities for potential rural migrants, and in rural farming activities. The impact of structural adjustment[7] and market liberalisation that followed, caused irreparable damage to small-scale farming. As a result, farmers experienced an uncertain market environment, with producer price fluctuations, inflationary input prices, and removal of marketing boards that supplied agricultural outreach (Bryceson, 1999).

Nevertheless, agriculture remains the chief occupation of rural communities, and for the poor, subsistence agriculture is often combined with labouring on other farms to stave

[7] Structural adjustment policies (SAPs) provide measures to enhance the role of markets for development, featuring export-led growth, privatisation and liberalisation. In the late 1980s and early 1990s, loans from the International Monetary Fund and World Bank to developing countries were made conditional on the implementation of SAPs (Goff, 2003).

off food insecurity. Accessibility to land, agricultural inputs, credit, equipment, information and markets are all determinants of rural wealth creation, and despite the apparent rise in non-farm activities, transport is clearly crucial in rural income generation.

The ability to work in agriculture is provided by good health and knowledge. Access to this necessary human capital is discussed next.

2.3.2 Access to health care

The health of the rural poor is of primary importance if they are to increase their productive capacity. One of the most important assets possessed by the rural poor is their ability to labour, made possible by good health, skills and knowledge that increase their employment potential, either for subsistence or wage labour (Ellis, 1997). According to the World Development Report (World Bank, 1993, p.137) "a lack of physical infrastructure is the largest obstacle to the use of health services. Distance to health facilities limits people's willingness and ability to seek care, particularly when transport is limited." There is typically a shortage of primary health care centres in rural areas of developing countries. For instance in Zambia, a minimum catchment of 3,000 people is required to support a health post or clinic.[8]

Poor health is deemed to be both a cause and effect of poverty (World Bank, 1994), with poor health causing lower productivity, reduced income earning potential and increased dependency on other economically active members of the community. Health services are generally poor in rural areas despite mandatory user fees which are imposed in many Sub-Saharan African countries. Medicines are often in short supply and sometimes administered by unqualified staff, which can deter the ill from attending clinics, and lead them to travel further afield to access health facilities that have sufficient medical supplies and trained staff.

Surveys of the rural poor (Davis, 2000 and 2001) have shown that households prioritise activities for which travel is required. Given the choice, they will often avoid expending money and time making trips to health centres unless in a medical emergency. In such an event, patients tend to be transported to clinics by any means available, such as

[8] Personal communication with Mr Maswana, Director of Health, Masaiti District, Zambia, March 2000.

bicycles, wheelbarrows and improvised stretchers. This is often the case when women go into labour and either do not have the opportunity to use motorised transport, or are refused access by transport service operators (see Section 5.4.3, Chapter 5).

Many poor households from the field research prioritised surplus capital at their disposal on education, transporting their produce to market, clothes, building materials and taxes. The case studies found that people from poorer households became disillusioned when they travelled to a health centre only to find that there were no drugs available, especially if they had spent their savings in reaching the clinic and paying for a consultation (see Section 5.4.3, Chapter 5).

Access to health facilities can account for a fraction of the household budget because acquiring medical care is often not a routine activity. A 1980s study of community transport needs in Tanzania, Ghana and the Philippines (Dawson and Barwell, 1993) showed that visits to health centres accounted for just 3.5% of the total transport time in the four areas under survey, suggesting that the frequency of trips to health facilities is very small.[9] Arguably, the need for health care is no less than any other social service, but other trip making requirements such as water collection (accounting for over 50% of all trips in the Dawson and Barwell case studies) are necessary for day-to-day survival.

In contrast, results from the study of the Thuchi-Nkubu Road in the Meru District of Kenya (Airey and Cundill, 1998) revealed that 13-14% of all sampled journeys between 1983 and 1989, were for health purposes.[10] Seemingly, visits to hospitals and dispensaries retained their relative importance both before and after the Thuchi-Nkubu road had been constructed (in 1985), accounting for a more or less consistent share of all journeys in the three survey years (1983, 1986 and 1989). These results are supported by the norms of Meru society where females generally undertake health-related journeys, and where child healthcare is a female responsibility. The high birth rate in this area necessitates frequent female visits to maternity units in local hospitals or health centres (Airey and Cundill, 1998).

[9] This research studied travel patterns *within* villages, which included water and firewood collection. These high frequency activities will undoubtedly have biased the proportions of trip purpose.
[10] This research studied travel patterns outside villages that excluded water and firewood collection.

Human capital required for labouring and income generation also comprises knowledge and skills that are derived from a basic education, for which access issues are considered below.

2.3.3 Access to education

The vision of universal primary education in all countries by 2015 in the White Paper on International Development (DFID, 1997) is an increasingly challenging goal. Especially since an estimated 113 million children of primary school age have *never* gone to school, a trend that has left a legacy of illiterate adults – currently estimated to be 870 million people in the developing world (DFID, 2000).

The Dawson and Barwell (1993) studies did not investigate the characteristics of trip-making to school. Yet trips to school were shown to be more significant than to health facilities by rural communities under survey in Zambia and Cameroon (Davis, 2000 and 2001). In Sub-Saharan Africa, children by and large walk to school regardless of distance, simply because there is neither the physical nor financial means to get to school by any other medium. Distance to schools is often prohibitive for both teachers and pupils, and is in part responsible for a high rate of absenteeism among both groups. The World Bank Poverty Assessment (1994) revealed that 53% of rural households in Zambia are located within 2km of the nearest primary school, with an attendance rate of only 60% for children of poor households. Hence, distance is a primary but not the only contributory factor to school absenteeism.

Often children are withdrawn from school for financial reasons, either because school fees (where mandatory) are prohibitive, or because children are required to contribute to household income by helping on farms. This is especially true of girl children who are often taken out of school to be married, as found in the Adamaoua Province of Cameroon (Davis, 2001).

Education is a requisite for poverty reduction and economic development. Research has established that every year of schooling increases individual wages for both men and women by a world-wide average of about 10%, in poor countries, the gains are even greater (World Bank, 2001b). Primary education plays a catalytic role for those most likely to be poor, including girls, ethnic minorities, orphans, disabled people, and rural families. These vulnerable groups are most frequently denied access to education and

remain unable to read or write, which is one of the strongest predictors of poverty (as indicated by the MDGs, of which increased literacy is a target). Finally, education is strongly linked to economic growth, by contributing to improved productivity, which leads to higher income and improved economic performance (World Bank, 2001b).

One of the Millennium Development Goals is to promote gender equality and empower women. Improved access plays a key role in empowering women and addressing some of the education and employment targets for women listed in the MDGs.

2.3.4 Women and transport

The UK Government's 1997 White Paper on International Development states that a commitment to equality between men and women "is an integral and essential part of our approach to development". It is "...based on principles of human rights and social justice". Poverty cannot be eliminated "...until men and women have equal access to the resources and services necessary to achieve their individual potential and fulfil their obligations to the household, community, and more broadly, society" (DFID, 1997, p.31). The Global Platform for Action at the 1995 World Conference on Women in Beijing agreed that a more strategic approach is required to promote full equality between all men and women. This was to substitute the former efforts of focusing on women's practical needs through a reduction of the burden placed on them by poverty and their multiple roles in society (Bamberger and Davis, 2001).

The time and energy burden of transport for rural women is well documented (World Bank, 1999a). In addition to their major productive roles, women are almost exclusively responsible for household and child-rearing tasks, so they have numerous and diverse travel and transport needs. Women also suffer the physical and health burdens of headloading wood, water and crops. Yet, cultural traditions and male-control of household resources mean that women have even less access than men to available means of non-motorised and motorised transport (Bamberger and Davis, 2001). Indeed, it is well recognised that most non-motorised transport is used overwhelmingly by men, because women seem unable to raise the necessary capital, or make sufficiently intensive use to take advantage of IMT technologies (Bryceson and Howe, 1993; Doran, 1996; Leyland, 1996).

Women are responsible for up to 85% of the total transport effort in terms of tonne-kilometres (Dawson and Barwell, 1993), comprising mostly village level travel associated with the subsistence burden of domestic load carrying. Domestic activities are generally performed by women on a daily basis, and include collection of water and firewood, preparation and cooking of meals, food processing, cleaning, washing and child rearing. Domestic trip purposes have a high economic and social value, but are not captured in conventional economic analysis, so the significance of domestic activities for the livelihoods of the household is greatly underestimated. Domestic activities are almost exclusively carried out by women, who perform 80% of the work involved, and therefore bear the brunt of corresponding transport tasks (Bamberger and Davis, 2001).

The majority of travel external to the village in Sub-Saharan Africa, including trips to the market place, is undertaken by men (Airey and Cundill, 1998; Bamberger and Davis, 2001). Yet, women still play a major role in this type of transportation, especially in West Africa where it has been estimated that four out of five women engage in crop marketing (Urasa, 1990).

The daily responsibilities accorded to rural women contain a heavy transport component and tend to be conducted using head or backloading. In Africa, studies of Ghana, Tanzania and Zambia have indicated that in the order of 65% of the total transport effort and 66% - 84% of transport time is borne by women (Malmberg Calvo, 1994). This extraordinary strain, in addition to that of reproductive and productive responsibilities has direct effects on women's health, and ability to labour. Headloading itself causes damage to the spine, and the energy expended in regular porterage causes fatigue and ill health (TRL, 2002). These health problems are compounded by the often high costs associated with accessing basic medical care, and are usually neglected. Consequently, the life expectancy of rural women can be significantly reduced, which has implications for the agricultural production potential of the household.

In order to maximise the potential for strengthening human capital that incorporates income generation, health and education, poorer households have a vested interest in managing any risks that may weaken their asset base. The next section explores how the poor employ different strategies to limit these potential risks.

2.3.5 Management of risk by the rural poor

Poor accessibility is shown to perpetuate deprivation in rural communities. Yet, the rural poor manage adverse risks that jeopardise their livelihoods, and adapt to shocks and stresses through the adoption of strategies that mitigate access related livelihood constraints. Box 2.1 provides a synopsis of risk strategies adopted, from the case study of transport related strategies in Zambia.

Box 2.1: Case study of sustainable livelihoods and transport in Zambia

The Zambia case study (Chapter 4) revealed that the rural poor in both Northern and Copperbelt Provinces have very little scope to adopt transport based strategies for improving their livelihood potential. The following demonstrates the resilience of the poor through adaptation of transport based livelihood strategies:

- Headloading or cycling to farms, services and markets when rural transport services cease during the wet season. Also, using a 'machila' stretcher for medical emergencies
- Community groups collectively hire vehicles to obtain agricultural inputs/take produce to market thus sharing costs
- Motorised trips used for multiple activities e.g. Taking maize/millet to the grinding mill and then mealie meal to market for sale to save time and money
- Mobilising community labour to carry out spot improvements on local feeder roads in the absence of institutional support.

Source: Davis (2000)

Sorensen (2000) reports on risk management by rural farmers, in the form of social networks and farmers organisations. He also refers to the work of Matlon (1991) who discusses crop diversification, non-agricultural income generation, transfers from migratory labour, sale of assets and inter-household/village transfers. In the absence of high levels of social networks and organisations, it is very likely that transaction costs within farming associations and co-operatives will rise due to a general lack of trust among the members (Sorensen, 2000). Lastly, Sorensen (2000) makes reference to strategic out-migration to urban areas as a 'risk coping' strategy for rural farmers. This enables rural households to cope with income risk because of cash transfers received from the out-migrated relatives.

The literature has indicated that accessibility to subsistence, economic and social amenities is partly determined by their distance and cost. For instance, the provision of

a standpipe or bore hole in a village can reduce trip times, unless the water is contaminated and a preferred water source is used instead. Similarly, a health centre located close to the community, containing inadequate facilities, may be substituted for one that is a considerable distance from the village but contains sufficient medical supplies and trained staff.

From this debate one might consider that the rural poor make decisions based on choice, and the decisions they make are not necessarily founded on the financial or time cost of accessing and utilising services. On the contrary, the quality of the service or commodity often bears more importance than its cost, and for this reason, rural households are shown to make substantial trade-offs to access services, else many trips would not be made in the first place (Howe, 2002).

The next sections examine contemporary development methods and approaches, including Participatory Appraisal, Sustainable Livelihood Approaches and social capital, before providing a synopsis of available transport interventions.

2.4 The Emergence of Participatory Appraisal

A participatory approach to research emerged following disillusionment with the deductionist development paradigms of the 1960s and 1970s. During this period, development approaches were top-down, with governments imposing 'development' on the poor and basing investment decisions on assumptions and quantification. Arguably, these approaches led to ineffective judgements and wasteful interventions. Participatory approaches to development were popularised by Gordon Conway and Robert Chambers in the 1980s with the emergence of Rapid Rural Appraisal (RRA) and participatory Rural Appraisal (PRA). These approaches emphasise local knowledge and enable local people to make their own appraisal, analysis and evaluation (Mikkelsen, 1995).

Participatory appraisal (PA) came into being as a challenge to the assumptions and practices of what Chambers called 'normal professionalism' (Chambers, 1997; Cornwall and Pratt, 2002). Participatory appraisal concepts emanated from the practice of Rapid Rural Appraisal (RRA) in the late 1970s and 1980s that sought to (Chambers, 2003):

- Accelerate rural change

- Recognise 'us' and our confidence in our knowledge as much of the problem, and 'them' and their knowledge as much of the solution
- Avoid survey slavery, epitomised by questionnaire surveys which are misleading and wasteful
- Be cost-effective, recognising trade-offs between depth, breadth, accuracy, and timeliness, assessing actual beneficial use of information against costs of obtaining it.

Participatory *Rural* Appraisal is a combination of approaches and methods, values and empowerment that applies social anthropology, agroecosystem analysis, farming systems research and participatory action research to provide a "repertoire of new methods with visuals" (Chambers, 2003, p.7). Chambers (2003) describes the key principles of PA as:

- Offsetting biases (spatial, project, person, gender, income, seasonal etc)
- Progressive learning – flexible, exploratory, interactive, participative
- Triangulation – using different methods, sources and disciplines, and a range of informants in different locations, allowing for cross-checking and validation of data
- A culture of sharing – of information, of methods, of field experiences
- Commitment to equity – empowering those who are marginalised, deprived, and excluded, including women, children, the very poor, elderly and infirm.

Community participation has evolved in a wide range of sectors and contexts as a result of a long-term decline in people's engagement in civil society and through the continuing exclusion of some social groups from decision making and from beneficial outcomes (Pretty and Hine, 1999). Participation is a process of engagement that can inform and contribute to improvements in performance and outcomes of development interventions. These include increased cohesiveness among and between social and cultural groups, greater capacity to negotiate with external agencies and improved decision making capabilities (Pretty and Hine, 1999).

However, while participatory appraisal emerged from a revolt against 'survey slavery' it cannot be considered a methodological panacea. In fact, as Chambers (2003) exclaims, there has been a mass of bad practice with PA 'experts' abusing the use of participatory tools, which by their nature are intended to be a learning experience for both participant and facilitator. He cites 'quick and dirty' practices that are undertaken rapidly without

due consideration for cultural nuances, and applied routinely by lecturing participants who inadvertently raise expectations (Chambers, 2003).

Similarly, in their critique of participatory development, Cooke and Kothari (2001, p.4) explain that "participatory development's tyrannical potential is systemic, and not merely a matter of how the practitioner operates or the specificities of the techniques and tools employed... (rather, it is how) the discourse itself, and not just the practice, embodies the potential for unjustified exercise of power."

There are clearly concerns over the quality of participatory appraisal, which has become a popular technique among practitioners across *all* sectors, and has come to be "applied by anyone, to just about anything" (Cornwall and Pratt, 2002, p.8). Nevertheless, PA continues to be a flexible, people-centred approach that facilitates learning and sharing experiences, such that local people can be empowered to influence investment and policy decisions undertaken at the macro level.

Participatory Appraisal (PA) has also been adopted in some transport research projects, most notably the DFID funded *Activity Patterns, Transport and Policies for the Urban Poor* project undertaken in Colombo (Sri Lanka), Accra (Ghana) and Harare (Zimbabwe). Participatory appraisal was used to provide a link between the production and sharing of knowledge about transport and livelihoods by operators, regulators and other road users (Jones, 2002). Participatory tools were used to engage people in discussions to (Jones *et al*, 2002):

- Consider, organise, analyse and describe transport and livelihood related issues in ways that enable information to be examined and debated by all stakeholders
- Develop approaches that present and rank issues of concern, enabling policy relevant information to reach transport regulators, and issues relating to transport service provision to reach operators.

Sustainable Livelihoods Approaches build on the success of participatory methods in making local-level development initiatives much more people-centred (DFID, 2001b). Certainly, participatory analysis of policy outcomes and of policy-making procedures and institutions can provide a much needed *bottom up* perspective to counter the typical *top down* view of the policy arena. The following section describes the way in which Sustainable Livelihoods Approaches materialised from a background of participatory development approaches, and their defining principles and concepts. For further

information on the tools employed in Participatory Appraisal, please refer to the Methodology in Section 3.5, Chapter 3.

2.5 Transport in the Context of Sustainable Livelihoods Approaches

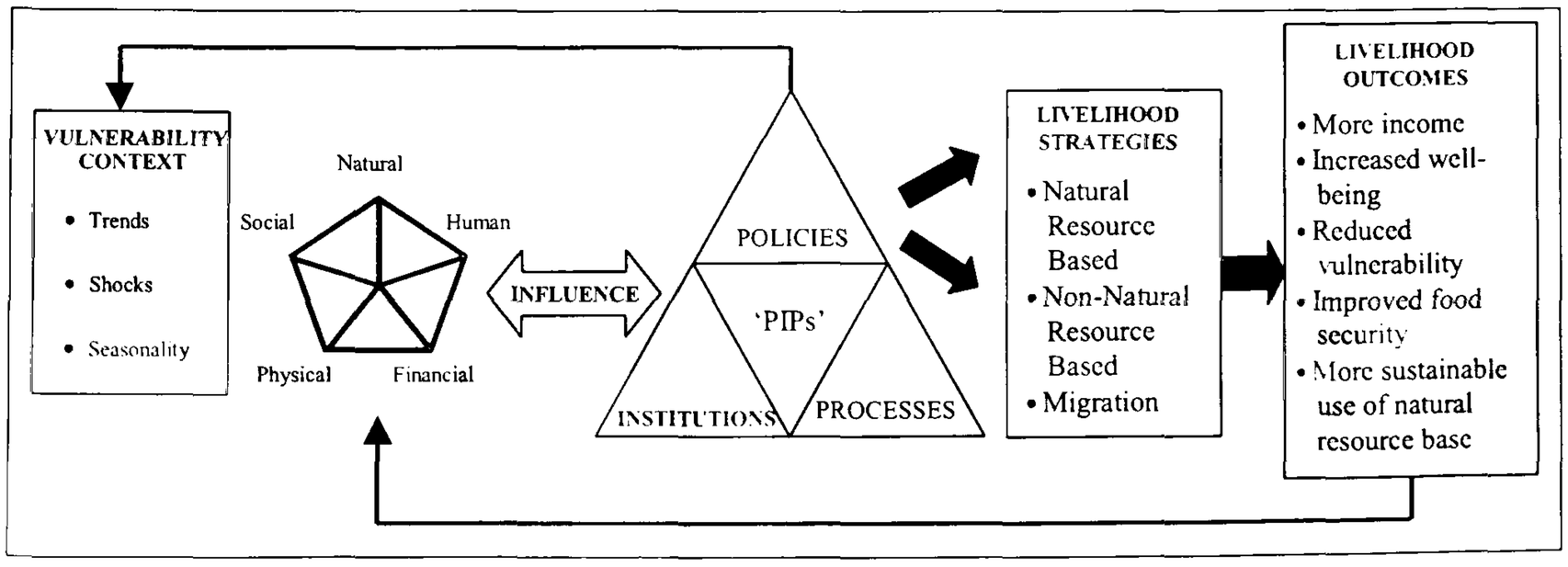
The paradigm shift from blueprint to process development approaches in the late 1980s, gave rise to the idea and emerging theories of Sustainable Livelihoods (SL) whose origins are rooted in the work of Chambers and Conway (1991). Sustainable livelihoods has emerged as a conceptual approach propounding poverty-focused development activities that are people-centred, participatory, holistic and sustainable.

The British Government's policy on international development underlines a commitment to the elimination of poverty, in line with internationally agreed development targets (DFID, 1997). The strategy adopted by DFID to achieve this aim has three main components:

1. Policies and actions which promote sustainable livelihoods
2. Better education, health and opportunities for poor people
3. Protection and better management of the natural and physical environment

Sustainable Livelihoods Approaches (SLA) have been developed over the last decade as a suite of analytical tools by NGOs and donors alike, notably the Department for International Development (Carney, 1998 and 2002), Oxfam (Neefjes, 1999), CARE International (Drinkwater and Rusinow, 1999), and the United Nations Development Program (Carney *et al*, 1999).

Figure 2.1: The DFID sustainable livelihoods framework



The DFID SL Framework (Figure 2.1) views people as living in an environment where institutions and policy processes influence access to five 'capital assets' (Box 2.2).

Key components of the framework for analysing the livelihoods of individuals and the community are their capital assets, their vulnerability context and the policies, institutions (layers of organisations both in the private and government sectors) and processes (laws, policies, incentives) which shape and influence the livelihood strategies that they adopt.

Box 2.2: DFID's definition of capital assets

Natural Capital: The natural resource stocks from which resource flows useful for livelihoods are derived (including land, water, wildlife, biodiversity, environmental resources)
Social Capital: The social resources upon which people draw in pursuit of livelihoods (i.e. networks, membership of groups, relationships of trust, access to wider institutions of society).
Human Capital: The skills, knowledge, ability to labour and good health important to the ability to pursue different livelihood strategies.
Physical Capital: The basic infrastructure (transport, shelter, water, energy and communications) and the production equipment and means which enable people to pursue their livelihoods.
Financial Capital: The financial resources which are available to people (whether savings, supplies of credit or regular remittances or pensions) and which provide them with different livelihood options.
Source: Carney (1998)

Livelihood strategies also feature in the framework, whereby people manage risk to help overcome adversity. The combination of vulnerability indicators, assets, policies, processes and strategies enable people to achieve their livelihood outcomes. The livelihood strategies that individuals adopt reflect their choices in building up their assets, for example through increased agricultural production. Alternatively, there may be opportunities to diversify into off-farm income-earning activities, or to seek a livelihood through temporary or permanent migration. These combinations of activities, which make up a livelihood strategy are known as a 'livelihood portfolio'. A portfolio will be diversified over time, and between households, communities and generations; hence the composition of livelihood strategies is a dynamic element of sustainable livelihoods and, as such, requires a historical-analytical approach (Fouracre, 1999).

The vulnerability context is particularly important as it indicates the nature of trends, shocks and culture, and the ability of the poor to withstand their impact. In addition, it is vital to understand the structures and processes that define people's livelihood options and determine who gains access to various assets, as well as influencing the value of each asset.

Other advocates of livelihoods approaches employ a variety of schematic models to represent their interpretation of livelihood attributes, including Khanya, Imperial College, the IDL Group and the Bradford Centre for International Development (Carney, 2002). However, as yet, there have been few attempts to apply sustainable livelihoods concepts in a rural transport context. Arguably, the underlying principles of SLA are already being attempted within transport. However the focus for intervention in the transport sector remains with the economic benefits that road construction and maintenance bring and does not sufficiently address the potential social benefits and disbenefits that rural transport also generates.

In a background note to 'Local Transport Systems and Sustainable Livelihoods', Peter Njenga (2001) highlights the paucity of transport projects that have applied SL principles. Such projects however, have been pioneered by the Intermediate Technology Development Group, including *Rural transport programme East Africa* in Kenya and the *Community project on rural transport* in Sri Lanka and Nepal (ITDG, 2004) and the International Labour Organization's (ILO) Advisory Support, Information Services and Training (ASIST) programme (ILO, 2002). Njenga makes a valuable contribution to the debate, stating that the relationship between transport and sustainable livelihoods analysis requires:

> "looking beyond traditional products of transport planning – infrastructure and vehicles – to the social products of interaction and access that it facilitates" (Njenga, 2001, p.3)

According to Bryceson *et al* (2003), published research on transport incorporating a livelihoods approach is fairly recent. Davis (2000 and 2001) undertook livelihoods analysis in Zambia and Cameroon, while Sohail (2000) studied the provision of transport services for commuters in Karachi, Pakistan. The authors explored the interconnections between SLA and more conventional transport research approaches in a rural and urban setting respectively.

The publication resulting from the research project *Sustainable Livelihoods, Mobility and Access Needs (SLAM)* provides an "investigation of the utility of sustainable livelihoods approaches in identifying the mobility and accessibility needs of the poor, with specific reference to rural-urban linkages" (Bryceson *et al*, 2003, p.3). The empirical research objectives were to measure and compare (Bryceson *et al*, 2003):

1) Mobility and accessibility in Zimbabwe and Uganda by sampling different locations along urban→peri-urban→rural transects of roughly equal distances
2) The livelihood and mobility characteristics of income-stratified informants.

The SLAM study revealed that Sustainable Livelihoods Approaches can be extended and enhanced by tracing the connection between livelihood patterns and different forms of mobility for example, residential, daily short-distance and annual long-distance mobility (Bryceson *et al*, 2003). It found that short-distance mobility is strongly associated with type of employment (formal or informal) and residential distance from work location. Long-distance mobility gives an indication of the social and cultural value placed on keeping in contact with extended families spanning rural-urban areas, rather than being an outcome of work patterns (Bryceson *et al*, 2003).

Similarly, the Feeder Roads Project in Mozambique adopted Sustainable Livelihoods Approaches while it was being implemented (DFID, 2001b). The objective of the project, which began in 1995, was to rehabilitate feeder roads for improving physical access in rural Zambezia. By 1998, the project had shifted focus from the product – the feeder roads – to how the roads affect nearby populations and their livelihoods (DFID, 2001b).

In summary, the implementation of SLAs requires the active participation of all sectors that have a vested interest in increasing the capital assets of communities. At issue for the transport sector is how 'transport' should be perceived within this analytical framework, and what sorts of contribution it can make towards the promotion of sustainable livelihoods.

Social capital is an asset deeply embedded in SLAs, and yet has been the focus of an immense amount of research and publications in its own right. Its relevance to transport and mobility is outlined in Section 2.6.

2.6 Transport in the Context of Social Capital

Social capital is a multifaceted term that infers emotional attachments to friends and family, as well as tangible or structural products of interaction. The interface between these social networks is extremely powerful. For example, they provide a safeguard against adversity by facilitating the transfer of assets. Access to these resilient networks requires mobility that is sustained by the available transport system. Transport is not simply a means of travel. It is the agency by which social capital networks can be supported.

It is prudent to point out here that, while *social* and *human* capital are closely related, they are in fact quite distinct, as highlighted in Table 2.1.

Table 2.1: Distinctions between human and social capital

Human Capital	Social Capital
▪ Ability to labour ▪ Skills and knowledge ▪ Education ▪ Good health ▪ Opportunities for income generation ▪ Life experience ▪ Fairly easy to measure	▪ Kinship and friendship networks ▪ Relationships of trust and confidence ▪ Group membership ▪ Institutional support ▪ Community associations ▪ Rules, norms and sanctions ▪ Also encompasses cultural capital ▪ Difficult to measure

In their series of papers published under an initiative called Social Development Systems for Co-ordinated Poverty Eradication (SD SCOPE), the Social Development Department at DFID addressed a multitude of social capital concepts and themes. The working papers produced by the World Bank's Social Capital Initiative in 1999 sought to do much the same. Hence, the subject matter is clearly not new (Putnam *et al*, 1993; Coleman, 1988; 1990). However, as with many development paradigms, it would appear that the relevance of transport in providing access to social capital has been largely ignored.

The World Bank defines social capital as the institutions, relationships and norms that shape the quality and quantity of a society's social interactions. Yet, 'social capital' has

come to be a catch-all umbrella term for 'horizontal' and 'vertical' social networks, reciprocal trust, and management of risk. Indeed, Woolcock (1998) highlights the indiscriminate adoption and imprecise application of the social capital concept in development circles.

The social capital drive began following the work of Putnam *et al* (1993) comparing society and governance in Italy.[11] It is rare to find social capital literature that does not pay homage to the research of Putnam and colleagues, but clearly issues of social cohesion and differentiation are different in patrilineal societies of Africa and Asia. Hulme (2000) provides a refreshing critique of Putnam's work, and questions the way in which international development agencies apply social capital in practice.

Increasingly however, the relevance of social capital in bringing about economic growth is being recognised (Grootaert, 1998), in as far as the bonds within and bridges between social groups and networks open up economic opportunities, and provide safeguards against vulnerability and adversity associated with shocks and stresses (Narayan, 1999).

Frankenberger and Garrett (1999) agree that social capital is one of the most important resources to be accounted for in poverty reduction programmes. They link social capital to notions of vulnerability, describing its 'reactive' and 'proactive' uses as a means of managing risk. The former refers to the community's reaction to shocks and stresses by providing emergency food, labour or financial assistance to the extreme poor who have no capital assets with which to substitute. The latter refers to community based social networks that are mobilised in advance of shocks and stresses to manage common property resources, or lobby for social service delivery (Frankenberger and Garrett, 1999).

Nevertheless, social capital is not wholly positive (Fukuyama, 2000; Frankenberger and Garrett, 1999; Woolcock and Narayan, 2000). Table 2.2 describes positive and negative outcomes of social capital that can help or hinder development.

[11] Coleman's work on 'Foundations of Theory' in 1990 and previous publications (1988) also referred to social capital, and the way it facilitates access to high quality, relevant and timely information at lower cost.

Table 2.2: Potential outcomes of social capital

Positive Outcomes	Negative Outcomes
▪ During hard times, friendship groups and kinship networks can provide emotional and financial support ▪ *It's not what you know but who you know* – reciprocal obligations within professional or cultural groups can be very strong in providing trust and financial support ▪ Similarly, traders in developing countries operate on the basis of trust to ensure that they receive quality goods at market price ▪ On a more regular basis, relations will send remittances and gifts to create a buffer in the event of a crisis ▪ Social capital empowers people to loan material items and financial credit to neighbours, and mobilise groups to build infrastructure and lobby government. ▪ Networks of trust help establish informal credit relationships in the absence of collateral	▪ Social networks, reciprocal trust and obligations can prevent the accumulation of capital for savings and investments – especially if households with surplus funds are under obligation to share their wealth with less fortunate relations ▪ This barrier to personal advancement may reduce incentives to raise productive capacity and generate more income ▪ Religious holy days can also obstruct income and productive capacity ▪ Some social groups possess strong social capital, even though the outcomes of their actions can be destructive to non-members e.g. the Mafia, Klu Klux Klan and drug cartels.

A number of leading sociologists have theorised concepts of social capital and the way in which social organisation can be 'converted' into economic exchange. Bourdieu (1997, p.52) for instance considers a network of relationships to be "the product of investment strategies, individual or collective, consciously or unconsciously aimed at establishing or reproducing social relationships that are directly usable in the short or long term." Furthermore, the "convertibility of the different types of capital is the basis of the strategies aimed at ensuring the reproduction of capital" (Bourdieu, 1997, p.54). Coleman (1997, p.86) elaborates by saying that "all social relations and social structures facilitate some forms of social capital; actors establish relations purposefully and continue them when they continue to provide benefits."

However, the work of Bourdieu, Coleman and numerous others, have since been rebuked in the writings of Fine (1999, 2002a, 2002b). Fine critiques the studies of Coleman and Putnam, finding their "false empirical analyses" to be "questionable" at

best, and proclaiming that "such are the shaky foundations for the evolving knowledge attached to social capital" (Fine, 2002a, p.7). Moreover, he indicates that "the attraction of social capital derives less from the unconsciously scurrilous scholarship of its founders and more from their having tapped the intellectual nerve of social theory at the turn of the millennium" (Fine, 2002a, p.7).

In his exposé, Fine (2002a, p.2) asks "how could social capital have become so widely and rapidly adopted, especially in view of its commonly acknowledged deficiencies." True, social capital exerts considerable influence on community groups, and has been rapidly accepted as an "analytical, empirical and policy panacea" (Fine, 2002a, p.3). One might argue, as Fine does, that "for the World Bank and others, social capital explains what is otherwise inexplicable and is the factor that allows society to function successfully" (Fine, 2002a). It has become the solution, or 'anodyne' to the missing link in the social sciences, through explanation of society's actions and behaviours, that cannot be deciphered by economic theory. "For economists, social capital is simply everything else after other more traditional forms of capital have been taken into account, with these understood as physical, natural, financial or human" (Fine, 2002b, p.798).

Yet, there is no denying that social cohesion, defined as social capital, is critical for societies to prosper by increasing people's capacity to organise for development, and in providing essential safety nets to manage risk. The difficulty is that by its very nature, social capital cannot easily be measured. "If physical capital is wholly tangible, being embodied in observable material form, and human capital is less tangible, being embodied in the skills and knowledge acquired by an individual, social capital is less tangible yet, for it exists in the relations among persons" (Coleman, 1997, p.83). Furthermore, how do people access social capital stocks, with which to transform into other capital?

Bourdieu (1997) explains that the volume of the social capital possessed by an 'agent' depends on the size of the network of connections he can effectively mobilise, and is hence related directly to the proximity in physical and geographical space of such a network. On this basis, mobility is required for both the generation and maintenance of social capital networks.

Mobility is essential to the sustainability of social networks, both in enabling access to cognitive and structural social capital (Uphoff, 1999), and in creating opportunities for networking in the very act of making a journey. Hence, transport is more than a physical network. One might argue it is a social network itself. However, the literature disregards the means by which people *physically* access social capital, whether in the form of associations and community groups or simply maintaining rural-urban linkages with extended family members.

Transport is typically presented as a physical capital asset, defined as basic infrastructure and intermediate services. Yet, a more holistic interpretation is to view transport as an essential link in the utilisation and accumulation of other assets. As such, transport can be referred to as the 'lynchpin' of the rural economy (Dawson and Barwell, 1993; Ellis, 1997; Booth *et al*, 2000). It provides access to water, fuel, shelter, primary healthcare, education, markets, and generates income, food security and social participation, as this thesis will demonstrate in the remaining Chapters.

Existing studies of transport and its impact on the rural poor focus largely on its role in the process of economic growth, by increasing the productive capacity of small-scale farmers, and promoting agricultural productivity through increased surplus production, and transportation of crops to market. Few researchers have investigated the role that transport plays in providing access to and maintenance of valuable social networks. Booth *et al* (2000) give a cursory mention to the value of social participation, as do the guidance notes on the application of sustainable livelihood concepts to rural transport services in Kenya (KENDAT, 2001); but only as far as describing the link between transport and the five core livelihood assets.

However, in a review of different forms of social institutions that shape economic life in West Africa, Lyon and Porter (2001) acknowledge road and path maintenance as an area of collective action essential to the pursuit of agricultural production and trade in Ghana. They cite a case study of Ghana's Central Region, where most village paths are maintained by groups of farmers whose farms are located along the path in question. While more important paths, tracks and minor unpaved roads that lead to other settlements are maintained by the whole village. Similar patterns of communal village path and road maintenance, often with accompanying sanctions of non-compliance (in the form of fines) are common across West Africa (Lyon and Porter, 2001).

Bourdieu (1997, p.54) acknowledges the value of time required for maintenance of social capital, explaining that "the best measure of cultural capital is undoubtedly the amount of time devoted to acquiring it." The value of time described here is a key concept in transport economics, but is adopted by Bourdieu to mean a solid investment in social exchange, for which the profits will eventually appear in monetary or other form. The value of time applied by transport practitioners constitutes the cost of time expended on trip-making, in terms of lost production or income generating opportunities, and the value of that time on the individual 'agent'. Where accessibility is markedly improved, the time-cost of a journey is reduced, enabling the poor to acquire other assets through increased productive activities.

Nevertheless, perceptions of social capital have not yet been adapted by many transport researchers and practitioners. This is likely to be a gradual process, if their protracted acceptance of sustainable livelihoods is anything to go by.

2.6.1 Measuring social capital

As previously mentioned, social capital cannot easily be measured. For this reason government organisations have been slow to adopt notions of social capital in their policy making because there is no tangible benchmark against which to measure improvement in stocks of social capital. For the same reason, social capital tends to be consistently undervalued by markets because it is the "most intangible of all intangible assets" (Fukuyama, 2000, p.13).

For empirical purposes, the use of proxy indicators is necessary to measure social capital, but these are often context and geographically specific and cannot be adopted wholesale. Membership in associations has traditionally been used as one such indicator (Krishna and Uphoff, 1999; Putnam, 2000), along with indicators of trust and patterns of social interaction, and also attendance at meetings of community associations, parent-teacher associations, and revolving funds etc. Grootaert (1998) provides a list of indicators that were used in the empirical case studies of the World Bank's Social Capital Initiative, a sample of which can be found in Box 2.3:

Box 2.3: Indicators of social capital

Horizontal associations

- Number and type of associations
- Extent of membership
- Extent of income and occupation homogeneity within the association
- Extent of trust in village members
- Extent of trust in government

Social integration

- Indicator of social mobility
- Riots and protest demonstrations
- Strikes
- Crime rates
- Suicide rates
- Prisoners per 100,000 people
- Divorce rate
- Unemployment rate

Civic and political society

- Percentage of population facing political discrimination
- Percentage of population facing economic discrimination
- Percentage of population involved in separatist movements
- Index of democracy
- Index of corruption
- Degree of decentralisation of government
- Voter turnout

Legal and governance aspects

- Quality of bureaucracy
- Independence of court system
- Expropriation and nationalisation of risk

Source: Grootaert (1998)

Grootaert and van Bastelaer (2001) claim that social capital determinants can be used as predictors of success when targeting neighbourhoods for social or public goods interventions, and use the example of community waste collection services organised voluntarily in Dhaka, Bangladesh (Pargal *et al*, 1999). Surprisingly, case studies on similar collective action for community road maintenance that have been cited in this research, did not feature in the Social Capital Initiative publications, but clearly there is a similar function of the level of social capital in these comparative examples.

In their summary, Grootaert and van Bastelaer (2001) suggest the focus of social capital quantification be based on three types of proxy indicators:

1. *Membership in local associations and networks:* counting the associations and their members and measuring aspects of membership and institutional functioning (i.e. democratic decision-making)
2. *Indicators of trust and adherence to norms:* involves asking respondents about their expectations about and experiences with behaviour requiring trust

3. *An indicator of collective action:* the extent to which collective action occurs can be measured and is an indicator of underlying social cohesion.

Collective action is an 'output' indicator because unlike membership in community associations which comprise the vehicles through which social capital can be acquired, collective action relies on the pre-existence of social capital for mobilisation to occur (Grootaert and van Bastelaer, 2001).

The Social Capital Thematic Group at the World Bank have formulated a questionnaire for the measurement of social capital (World Bank, 2002) which is a prototype instrument that reflects the structural and cognitive dimensions of social capital and the way in which social capital operates, comprising the following six sections:

1. Groups and networks
2. Trust and solidarity
3. Collective action and co-operation
4. Information and communication
5. Social cohesion and inclusion
6. Empowerment and political action

The questionnaire is not intended to be a stand-alone tool, but rather for integration with the Living Standards Measurement Study (LSMS),[12] and adopts a conceptual approach so that the tool can be applicable over a wide range of countries (World Bank, 2002).

It should be noted here that social trip-making as defined in Chapter 7, and in the list below, is not featured in the indicators of Grootaert (1998), Grootaert and van Bastelaer (2001) or the World Bank (2002).

Fine (2002a, p.10) is more scathing of the World Bank's attempts at measuring social capital, exclaiming that "the paradox of 'participation' in measuring social capital as an aspect of poverty runs deeper across the shifting rhetoric of the World Bank, especially in the African context." In an earlier publication, Fine and Green (2000) raise caution about the dangers of narrowing down the list of what is empirically and quantifiably

[12] The Living Standards Measurement Study (LSMS) was established by the World Bank in 1980 to explore ways of improving the type and quality of household data collected by government statistical offices in developing countries (World Bank, 2004c).

deemed social capital, and of trying to pin down consistent measures that make the concept of social capital more acceptable to economists.

An exploration of social trip-making and maintenance of social capital networks in Kenya is documented in Chapter 7 and examined further in Chapter 8 when the literature is revisited in light of empirical findings; and ways in which poverty reduction can be addressed with social capital and mobility solutions discussed.

This review of literature argues that there is a plethora of existing data on types of social capital and its significance for rural development but there remains a paucity of information regarding accessibility to social capital networks. However, there is now sufficient understanding and theoretical validity that it is possible to study social capital in the context of mobility. Section 8.2 in Chapter 8 reviews the implications for social capital and mobility following the three case studies, and reflects on additional literature that supports the primary evidence from the Kenya fieldwork.[13] This research will contribute to the continuing discourse from the perspective of the transport sector, beginning with a description of transport infrastructure and service interventions.

2.7 Transport Interventions

Transport can account for over 10% of a rural household's expenditure (see Figure 7.8, Chapter 7), often leaving them with inadequate surplus capital to invest in assets such as health and education. One might consider an appropriate planning approach to encompass a package of measures incorporating interventions for the condition of road and track networks; and access to low-cost services using appropriate rural transport services and intermediate means of transport. This section explores the physical interventions available that can improve the accessibility of the poor.

Several decades ago there was significant expansion of rural road networks along routes where major cash crops could be extracted, and the roads under construction were selected for their potential contribution to agricultural output (Howe, 1997a). There has since been a gradual shift in opinion towards favouring the provision of rural transport

[13] To maintain the logic of this thesis and the process of Design→Research→Result, the social capital argument is revisited in Chapter 8 to examine its importance in justifying transport service and road infrastructure investment in rural Africa.

infrastructure (i.e. rural road, track *and* path networks) as well as the traffic features that utilise these networks. The emphasis has shifted from construction of new roads, to maintaining and extending the life of existing roads and tracks using local labour to maximise poverty alleviation benefits, while promoting use of low cost means of transport on low volume roads (Tournée, 2000).

2.7.1 Transport infrastructure

Rural transport infrastructure consists of unclassified 'feeder' roads and bridges that primarily serve local communities for short distance trip-making, rather than the through traffic and long distance functions of primary, secondary and trunk roads (Howe, 1997a). These rural access roads tend to comprise earth or gravel surfaces and often carry less than 50 motorised vehicles per day (Lebo and Schelling, 2001). They can be highly susceptible to damage and degradation from the elements, particularly during the prolonged wet season (experienced in most tropical countries), and require regular maintenance and rehabilitation to sustain vehicle passability (Lebo and Schelling, 2001).

Informal path and track networks link households to key amenities in rural villages and have evolved through continuous use rather than purposeful construction. Studies undertaken by Dawson and Barwell (1993) in Tanzania, Ghana and the Philippines demonstrate the importance of local paths and tracks in fulfilling short distance trips. These tend to be made within the village confines, usually on foot, to undertake subsistence tasks such as water and fuel wood collection, but also in accessing agricultural land. Journeys that originate from the village invariably begin on this low density network to access the road from which motorised transport can be sought (Dawson and Barwell, 1993).

Rural roads have for a long time been known as development 'catalysts', demonstrated by studies in Bangladesh (Ahmed and Hossain, 1990). These studies found villages with better than average access to be significantly developed in terms of agricultural production, household incomes and health among other measurable indicators. However, Hine (1982) explains that transport investment is most likely to affect agricultural development in situations where large changes in relative prices will occur. Moreover, in most of the developing world small rural roads of less than 20km are very unlikely to change the relative prices of agricultural produce to any considerable extent.

Dawson and Barwell (1993) emphasise that it is imperative that the specification of the infrastructure, along with its location, method of construction, maintenance and cost, are appropriate to the transport functions it will serve.

A number of funding mechanisms are available for the improvement of rural transport infrastructure including resources from central government, dedicated road funds, or through donor financing (Malmberg Calvo, 1998). The most common source of funding for maintenance of rural roads is central government, which typically provides up to 5% of public sector revenue to rural governments for the transport sector. Malmberg Calvo (1998) highlights that this figure barely covers salary expenditures of local rural road units, nor the equipment and fuel required for undertaking capital intensive works. Cost sharing is another means of obtaining funds for road maintenance through a combination of road users, central government, or donors financing an amount proportional to that provided by the local government (Malmberg Calvo, 1998).

Road maintenance funds are used to transfer the cost of routine and periodic maintenance improvements to the road user through charges collected by central government, including fuel levies, vehicle licence and international transit fees, and road tolls (Malmberg Calvo, 1998). Levies on fuel provide the largest proportion of dedicated road funding because fuel is consumed by vehicles on the entire road network and the road fund does not take revenues from other sectors. Funds are channelled to all roads, and sometimes even to unclassified roads, as in Zambia (Malmberg Calvo, 1998).

In the main, where a formal framework for ownership of community roads is absent, it becomes the responsibility of the local community to finance and undertake maintenance works to village access routes. Hence, community roads and paths can become neglected from routine maintenance either because they have no legal owners, or because the local government road agency lacks the resources to undertake maintenance (Malmberg Calvo, 1998). In this instance, communities have been known to take responsibility for village access roads (see Box 7.5, Chapter 7).

Communities often finance their own transport infrastructure through cost-sharing arrangements with the local government or grants from donor agencies and typically provide labour, construction materials or payment in kind (Malmberg Calvo, 1998). They are usually provided with equipment and both technical and managerial advice to ensure accountability and transparency when procuring maintenance funds and

community investments (Malmberg Calvo, 1998). Community maintenance allows road users to prioritise their own investment choices and take 'ownership' of the roads and structures, empowering them to continue maintenance long after the initial investment or cost-sharing has been made (Malmberg Calvo, 1998).

The sustainability of a rural access road is largely dependent on its maintenance. Howe (1997b) speaks of a 'disabling infrastructure' arising from the 'maintenance hitch'. This implies that roads which are neglected from regular maintenance will diminish in quality to such a degree that any impacts on poverty reduction will be much reduced, and the road will become obsolete. Due to a continuous cycle of maintenance under-funding during the 1960s to 1990s, many rural feeder roads now require partial or even full rehabilitation. This is proving to be a costly intervention, and increasingly road engineers are resorting to spot improvements as a low cost mechanism for basic access provision.

Labour based approaches or employment intensive investments (Tournée, 2000) are used as a viable alternative to conventional capital or technology intensive approaches to transport infrastructure maintenance and rehabilitation. Labour based technology is increasingly being considered part of mainstream economic development and is used on very low volume roads where equipment based methods are deemed cost inefficient. Labour based methods are financially and economically viable, both through savings in foreign exchange and the absorption of unemployed and underemployed people from local communities providing immediate poverty alleviating effects (Tournée, 2000).

Rural road construction using labour-based methods requires between 2,000 and 12,000 person-days per kilometre for construction and 200 to 400 person-days per kilometre for maintenance (Lebo and Schelling, 2001). There are many benefits of labour based practices. As well as employment generation, labour based practices can contribute to local empowerment and capacity building through training, skills-transfer and creation of ownership, and can provide women with a significant cash income (Tournée, 2000). Raising the purchasing power of rural communities also has a significant impact on the national economy, particularly since labour is often sourced from farms, hence surplus spending can be reinvested in agriculture.

The challenge for the ILO/ASIST that supports employment intensive investment is to integrate labour based approaches into local level planning structures by encouraging

governments to commission road maintenance to small-scale labour based contractors in an enabling environment of market driven growth and competition (Tournée, 2000).

As Dawson and Barwell's (1993) publication indicates 'Roads are not enough' and the next sections describe the transport services and intermediate means of transport required to facilitate travel along the roads.

2.7.2 Rural transport services

Rural Transport Services (RTS) refer to motorised and non-motorised vehicles operated privately and by the state in rural and peri-urban areas. In remote rural areas, RTS provide access between farms, villages and markets for the transit of agricultural inputs and produce. Transport services also include IMTs such as tractors and even motorbikes and bicycles (see Box 2.4). The provision of RTS is largely demand driven, hence the cost of operating transport services on low volume roads is often very high because they are more likely to be poorly maintained than roads that carry a greater volume of traffic (Ellis and Hine, 1998). Consequently, RTS vehicles require regular maintenance and re-fuelling as the poor quality infrastructure and terrain impacts directly on vehicle operating costs. These costs are transferred to the service user and tend to be inflated because of the low density of demand (Ellis and Hine, 1998).

African rural transport services are typically uncompetitive, high cost and undiversified. In contrast, Asian transport is very competitive, low cost and has a high service frequency with diversified routes, aided by a high density of demand (Ellis and Hine, 1998). Low density of demand for transport services in Africa, caused by low population densities is not conducive for an enabling operating environment, resulting in high costs of transport that deter farmers from cultivating more produce than can be transported to market at an affordable rate. For instance, Ahmed and Hossain (1990) found that many African farmers receive only 30-50% of the final price of produce sold, compared to 70-85% in Asia.

The literature indicates that this market failure taking place in countries of Africa is sustaining an uncompetitive environment, characterised by high vehicle and parts prices, low vehicle utilisation and high maintenance costs. In spite of the sporadic distribution of rural communities, there are other factors that affect the operating environment for rural transport services, including import tariffs and transport cartels.

Box 2.4: Boda boda operations in Uganda

Boda boda is the name given to the bicycle and motorcycle based passenger and small goods carrying service provided in Uganda. The name boda boda is derived from a corruption of the English 'border border' when bicycles were used to smuggle goods across the Kenyan border in the 1960s and 1970s. In 1994 the motorcycle fleet took off with the import of second hand bikes from Japan.

A recent study of the boda boda phenomenon in the Kampala-Jinja corridor of Uganda undertaken for the DFID Knowledge and Research project *Sustainable Livelihoods, Mobility and Access Needs* revealed that as taxi services, the boda boda are not inexpensive. At 2-7 times the cost of conventional bus services (known as taxis), they are inaccessible to the very poor, yet they do provide a convenient service to low and middle income users, and can negotiate off-road terrain for short trips (typically within a radius of no more than 10km).

Their greatest impact on the poor is through the employment provided. Operators are drawn mostly from the least educated classes and each is shown to support an average of 6 dependants including themselves. With an estimated national fleet of 200,000 bicycle and 70,000-motorcycle boda boda, about 1.6 million, or 7% of the population, depend for part of their livelihood on the industry. The livelihoods of a further 100,000 are supported from the repair and sustenance services the industry needs.

Boda boda primarily provide three types of service:

1. Within main urban areas, where they compete with conventional special hire taxis
2. As feeders to urban areas on routes that - due either to the low density of demand or the roughness of the route - are unattractive to taxis
3. As feeders to the main roads in which role they tend to complement taxi and large capacity bus services.

Despite the high cost of fares, boda boda use is reported to raise the users income through increased volume of goods transported and sold, and associated time savings. It is clearly a unique transport service that fulfils the 'missing middle', that which bridges the gap between headloading and motorised transport services.

Source: Howe and Davis (2002)

The cost of a vehicle tends to be much higher in Africa, as much as two to three times the untaxed price than in Asia due to a combination of factors, including a small market, exclusive dealerships and government taxation; costs which are invariably transferred to

transport service users (Ellis and Hine, 1998). While taxes and import duties prevent the over supply of vehicles, tax relief measures lower the purchase cost of vehicles which in turn lowers user fares and increases demand for rural transport services.

Transport services in developing countries are often regulated by unions, transport associations and other informal cartels who determine fares and routes, which leads to under-utilised vehicles and inefficient operating practises (see Section 5.3, Chapter 5). In some instances, vehicles queue for days in urban centres while they fill up to capacity before they can depart for their rural destination (Ellis and Hine, 1998) (See Section 4.3.2, Chapter 4). More stringent regulation of RTS by national and district level government organisations and private sector transport associations would increase service frequency to more remote locations through route licensing, quantity controls and quality controls (Ellis and Hine, 1998).

If operators were required to run services to a timetable, they would have to leave the bus terminal before the vehicle reached capacity, allowing passengers to use the RTS before becoming full (Witkiss *et al*, 2001). Quantity controls would ensure that all routes are serviced by an appropriate number of vehicles to avoid operators limiting routes to those that are most lucrative or heavily trafficked. Similarly, quality controls would prevent the overloading and operation of unroadworthy vehicles to reduce the incidence of road traffic accidents, although this latter measure is difficult to regulate, particularly on remote rural roads (Witkiss *et al*, 2001).

Possible means of creating an enabling environment for rural transport services is through the following (Witkiss *et al*, 2001):

- Provision of subsidies that are directed towards the rural poor
- Training of vehicle regulators and operators in business management skills and vehicle maintenance and operations
- Pubic private partnerships (PPP) that formalises political support and the creation of more rural markets that generate demand for RTS.

2.7.3 Intermediate means of transport

Intermediate Means of Transport (IMTs) provide the transport interface between walking and motorised public transport services. While the majority of trips made internal to the village are undertaken on foot (typically 70% to 80%), such trips prove to

be burdensome, not least because of the distances covered, the load carried (typically 25-30kg) and the time taken to porter goods (Dennis, 1998). Some households have access to a non-motorised means of conveyance that tend to be utilised when the movement of produce for marketing becomes unmanageable by human porterage (Dennis, 1998).

IMTs include everything from back frames and shoulder poles, to bicycles, wheelbarrows, hand carts and animal carts (Doran, 1996), which provide a cost effective means of transporting people and goods along village paths and tracks that cannot be negotiated by conventional motorised vehicles (see Table 2.3 for some IMT characteristics).

Motorised IMTs provide the technology to substantially increase the power and speed at which people and goods can be transported, yet this increase in mobility comes at a cost. Motorcycles and tractors (the most common motorised IMTs) cost upwards of ten times the initial outlay of non-motorised IMTs (see Table 2.3), not to mention the operating costs of such machinery (including acquisition of spare parts, and fuel). High utilisation rates are needed to justify the operating costs of IMTs, which make them inappropriate for 'internal' trip-making (Starkey, 2001). More commonly, motorised IMTs (tractors especially) are frequently used by village co-operatives in the mass transit of produce to market during the harvest period (Starkey, 2002).

Table 2.3: Characteristics of selected intermediate means of transport

Mode of Transport	Typical Load (kg)	Average Speed (km/hr)	Daily Range (km)	Typical Purchase Cost (US$)
Human	25-30	4-5	15-20	-
Wheelbarrow	90	3-4	5-6	60
Handcart	200	3-4	10-12	50-100
Bicycle*	70	10	50	60
Donkey cart (1 donkey)	300	4-5	20	150-200
Ox cart (2 oxen)	800	3-4	20	250-350
Motorcycle	50	40	150	2000
Tractor	800	10	40	3000

Source: Dennis (1998)

** Ellis (1996)*

IMTs can have a substantial impact on the productivity of a household as they increase the distance over which produce can be marketed and produce time savings in daily transport tasks, allowing for increased agricultural productivity. However, IMTs are by no means a panacea for village level transport. The initial investment in an IMT is often prohibitive to most households. In order for IMT maintenance to be affordable, a 'critical mass' is required for provision of low cost spare parts suppliers and manufacturers (Starkey, 2001; Starkey, 2002; Starkey *et al*, 2002). Starkey (2001) demonstrates the critical mass achievable in countries of Asia where backward and forward linkages are generated from the volume of IMT demand. However, in Sub-Saharan Africa manufacturers and suppliers are sparse, and since there are no direct financial returns on undertaking subsistence tasks using IMTs, women are often prohibited from their use (aside from the cultural taboo of using select modes such as bicycles) (Starkey, 2001).

In addition to affordability there are other considerations that dictate the use of IMTs including topography, infrastructure and other climatic and physical conditions (Starkey, 2002). Nonetheless, the adoption of appropriate policies that advocate education and awareness of appropriate IMT use, and increased production and supply through credit schemes, will lead to their permeation of low income communities.

2.7.4 Credit facilities for rural transport

One of the major obstacles to accessing a means of transport by the poor is a lack of finance, exacerbated by an inability to provide collateral for loans with which to purchase an IMT and subsequently generate sufficient income to repay the loan (Starkey, 2001; Starkey, 2002). Credit institutions tend to be cautious about lending credit to low income households and individuals, because their income is not guaranteed, is sporadic, and is subject to high risk of shocks and stresses (Doran, 1996). Yet, provision of group credit schemes operated by NGOs, particularly for the purchase of IMTs, have proven successful when certain conditions are applied. For instance, frequent repayments that can be monitored in the event of a loan default, rebates to borrowers for full repayment, and group credit schemes that ensure collective repayment of loans (Ellis, 1997).

The Grameen Bank in Bangladesh has been operating since 1976, and has become renowned for making small loans to the landless with a default rate of only 3% (Dawson

and Barwell, 1993). One of its priority areas is to provide loans for the purchase of low cost vehicles, and in its first ten years purchased 15,200 vehicles for distribution on credit (Dawson and Barwell, 1993). The formation of co-operatives is an effective way of provisioning credit to groups of farmers. However, if the maintenance of equipment and purchase of spare parts is not assigned to a particular group member, eventually the IMT can become degraded (Ellis, 1996). Large co-operatives are especially prone to this because of a lack of 'ownership' by any individual member (Ellis, 1996).

Favourable import policies can aid the provision of IMTs through credit schemes as there will be a reduced risk to the credit provider, and a reduction in import tariffs will also reflect favourably on the borrower whose repayments may be smaller or spread over a longer repayment period (Dawson and Barwell, 1993). Traditionally, institutional credit facilities have excluded women who typically have even less collateral then men and are unable to make a sufficient return on their investment (Ellis, 1997). However, evidence from the Grameen Bank and others, has shown that in fact women have a lower default rate than men and are hence lower risk borrowers – this is also the case in Sub-Saharan Africa (Dawson and Barwell, 1993). It would seem from the literature that income generating opportunities available to the poor can be increased by the provision of credit to acquire intermediate transport and agricultural equipment, and by the IMTs themselves, which become self financing.

The most effective policy approach for improved accessibility is to improve the performance of the transport network, as well as increased distribution of services and facilities to better reach remote communities. The possibility for non-transport interventions is discussed here.

2.7.5 Non-transport interventions

In rural accessibility planning there is an increasing emphasis on non-transport interventions as a solution to inaccessibility, with proximity to social services and amenities being key to increased time savings (Dawson and Barwell, 1993; Doran, 1996; Starkey, 2002).

Transport can be described as a service, a means to an end that allows the poor to access other services such as health, education and markets, and provides a 'vehicle' for maintaining social networks. If the location of these services was planned more

effectively, to be more accessible to remote settlements, the need for costly infrastructure and transport means might be negated. In fact, Dawson and Barwell (1993) maintain that through location of facilities and storage and credit provision, accessibility requirements can be reduced. To put it into perspective, 5.2% and 3.2% of Gross National Product is spent on education and health respectively world-wide, compared with between 5-15% public expenditure on transport (World Bank, 1999b).

Yet, while the provision of transport infrastructure is highly capital intensive, the provision of social amenities is not necessarily a low-cost solution, particularly considering the materials and labour involved in construction and subsequent staffing costs (see Box 2.5).

Box 2.5: Case study of non-transport interventions in Cameroon

The Cameroon case study (Chapter 5) found that the average cost of maintaining 1km of earth road in Cameroon is US$2,500, with full rehabilitation costing approximately US$10,000 per km. The annual cost of running a school in Cameroon (excluding staff costs) is US$70 per child,[14] compared with total health expenditure in 2000 at US$8 per capita. The cost of providing basic social services is clearly a fraction of that spent on providing road access, yet as we are constantly reminded, roads are not enough, and if there are no means with which to travel on the rural roads then the intervention has been wasteful.

The provision of more services and amenities close to populated settlements would benefit local communities through travel time savings, allowing them to spend their time on more productive activities. However, as with road prioritisation, there are certain criteria for locating schools and health services in rural areas including their catchment area, and population served. Consequently, many remote settlements are marginalised by conventional appraisal approaches, such as cost benefit analysis for investment in roads and social services.
Source: Davis (2001)

Furthermore, the amenities themselves require access, whether by road, path or track, constituting an additional cost. There are also instances where amenities such as drinking water and wood fuel are not provided from a fixed source (Doran, 1996). Wood that is not renewed is a finite resource, depleted through deforestation and causes people to travel farther to source fuel for cooking. Likewise, natural water sources may

[14] Equivalent to 50,000 FCFA per child (please refer to the Cameroon case study in Chapter 5 for more details).

become depleted over time, thus increasing the transport burden (Doran, 1996).

The most promising solution to the provision of and access to rural services is a holistic approach that combines low-cost infrastructure and support for low-cost transport provision such as IMTs, with the provision of social amenities that are appropriate to the population density.

The International Labour Organization's Integrated Rural Accessibility Planning programme helps develop complimentary access solutions by prioritising investment according to maximum need and impact (ILO, 2002).

Integrated Rural Accessibility Planning (IRAP) is a rural transport infrastructure-planning tool that prioritises investment according to maximum need and impact, either by improving the road network or by improving the distribution and location of services within an area (Dixon-Fyle, 1998). Integrated Rural Accessibility Planning provides rural communities with access to a range of goods and services, and local employment forms the platform for economic and social development (Dixon-Fyle, 1998). It is a proactive planning tool that enables the local planner to take objective decisions based on data collected at village and district level. Interventions that are developed from accessibility planning often combine the improvement of physical infrastructure, means of transport, location planning and quality improvement of services, such that minimum access requirements are met at least cost, both internal and external to the village (Dixon-Fyle, 1998).

2.8 Mainstreaming Poverty Issues in Transport Policy

The preceding sections have highlighted the main areas where rural transport planning in developing countries needs to be more effective in delivering poverty reduction objectives. In general, it is recognised that in the past, there has been no attempt to systematically address issues of poverty within the transport sector. Arguably, the mechanisms for making transport programmes more responsive to poverty reduction are not well developed.

Evidence from the 'Voices of the Poor' (Narayan *et al*, 2000a) shows that immobility caused by a lack of transport is a key dimension of poverty (see Box 2.6).

Box 2.6: Some views on transport from "Voices of the Poor"

"*It is because of poor roads that the produce of the farmers is bought at low prices*"

Uganda

"*If we get a road, we could get everything else; community centre, employment, post office, water telephone*"

Jamaica

"*Where a road passes, development follows right on its heels….*"

Cameroon

"*We think the earth is generous; but what is the incentive to produce more than the family needs if there are no access roads to get one's produce to market*"

Guatemala

Source: Narayan et al (2000a, p. 36-38)

The poor are a diverse and heterogeneous group and hence their specific needs vary substantially both within and between countries. Due to this regional variance, direct interventions require careful design if they are to serve the particular needs of poor people. However, certain generic transport problems are typical among poor people. A common feature is the limited use of motorised transport. Many journeys are made on foot with loads carried on heads and backs. The poor suffer from inadequate access to markets and to basic social services and face traffic hazards when travelling on foot or by non-motorised modes in mixed traffic (Ellis, 1997).

The voices of the poor are only just beginning to find their way into political channels of decision making (Narayan *et al*, 2000a; Narayan *et al*, 2000b; Narayan and Petesch, 2002), but state institutions have traditionally been found to be ineffective, inaccessible and disempowering (Narayan *et al*, 2000a). Hence, when the poor have relatively little political influence, their transport issues – low cost means of transport and local infrastructure – can become overlooked. Consequently, macro level decisions made on transport investments and transport policy may not take adequate account of access costs and implications for poor people.

The current focus on poverty within international development policies now necessitates a paradigmatic shift in transport planning method. The transport sector

receives a considerable proportion of International Development Assistance (IDA). It is for example, one of the largest sectors in World Bank operations (see Section 2.2.3). While programmes in agriculture, education, health, water and sanitation have long played a direct role in poverty reduction, one might argue that major IDA agencies have insufficient understanding of how their transport programmes in development countries contribute to poverty reduction.

In line with the direct and indirect approach to poverty reduction, development projects in the transport sector can roughly be divided into three categories (Gannon and Liu, 1997):

1. Projects that primarily focus on poverty
2. Projects primarily oriented towards efficiency and economic growth
3. Efficiency and growth-oriented projects with components that focus on poverty.

Transport projects that focus on poverty are often more localised in nature, and employ a range of complimentary activities. These include improvement of local road and path networks, employment creation through labour based works, provision of affordable means of transport, and improved access to health and education facilities (Gannon and Liu, 1997). Transport projects oriented towards efficiency and economic growth are more common in national planning and are typically macro in nature, including major trunk roads or railway projects (Gannon and Liu, 1997).

Poverty reduction through labour based practices warrants wider attention and application, and is explored in brief below.

2.8.1 Poverty reduction through labour based approaches

Developing countries are generally labour-abundant economies. The transport sector has potential to create substantial employment opportunities for the poor through labour based infrastructure projects (Gannon and Liu, 1997; Lebo and Schelling, 2001). This can be done both in construction and maintenance of rural roads, including village paths and tracks. The economic efficiency of labour based methods depends on the relative prices and productivity of labour as compared to capital equipment (TRL, 2003a). In general, efficient labour-based methods do not attempt to execute all construction activities using only manual labour. Rather, labour based works tend to be complemented by capital equipment for those activities that cannot be efficiently

executed by hand (TRL, 2003a). For example, tractors and trailers can be used to haul materials, and pedestrian rollers to compact earth fill.

It has been demonstrated that under the right institutional and management conditions labour based methods are rather cheaper than those that depend on heavy equipment (Box 2.7 demonstrates the potential of labour based works in Kenya). When labour based methods are appropriately implemented, they can yield a saving of about 15% of total costs along with a 40% saving in the foreign exchange component for construction of roads of comparable standard (Edmonds and de Veen, 1991).

Box 2.7: A labour based road construction and maintenance system

Kenya provides a good example of the potential for labour based methods. Nearly 10,000km of rural access and minor roads have been rehabilitated and are now being maintained by labour. It has been estimated that the use of labour based methods of maintenance could be applicable to a total of 24,000km – or 39% – of Kenya's gazetted network.
Source: Riverson and Carapetis (1991)

Labour based methods are technically effective and cost-efficient. They create employment and income opportunities in rural areas, reduce vulnerability during periods of agricultural slack, and minimise problems associated with maintenance of capital equipment (Gannon and Liu, 1997; TRL, 2003a). They also create local skills that can be used subsequently for the maintenance of the local transport network (Lebo and Schelling, 2001).

In order to mainstream poverty issues in transport policy is it possible for accessibility constraints and transport based solutions to be considered by overarching policy approaches at the supranational level? Some of these approaches are examined in turn here.

2.8.2 Transport and millennium development goals

The Millennium Development Goals (MDGs) are a set of targets agreed to by the world's governments at the Millennium Summit in 2000, with the overall objective of halving the proportion of extreme poverty by 2015 (MDG, 2003) (see Sections 8.2 and 9.1 for a further critique of MDGs and transport). In the transport sector the MDGs

imply a move from exclusive cost/benefit justifications to linking the outcomes of transport projects to those of poverty reduction (DFID, 2002b).

Improving transport is not in itself one of the MDGs. The MDGs aim to make progress in key areas of human development such as food security, poverty, education, health, empowerment, gender equality and child mortality etc. Achievement of progress in these areas requires a combination of interventions, with transport providing a central integrative role.

2.8.3 Poverty reduction strategy papers

Poverty Reduction Strategy Papers (PRSPs) describe a country's macroeconomic, structural and social policies and programmes to promote growth and reduce poverty, as well as associated external financing needs. Poverty Reduction Strategy Papers (PRSPs) are prepared by governments through a participatory process involving civil society and development partners, including the World Bank and the International Monetary Fund (IMF) (World Bank, 2004d).

Some consider the PRSPs to have replaced the failing structural adjustment policies when they were introduced by the IMF in 1999 as the new preconditions for loan and debt relief (Stewart and Wang, 2003). "The PRSP process is simply delivering repackaged structural adjustment programmes. It is not delivering poverty-focused development plans and it has failed to involve civil society and parliamentarians in economic policy discussions" (Bretton Woods Project, 2001, paragraph 1).

Poverty Reduction Strategy Papers are the main framework that very poor countries use to set up priorities for reducing poverty. A key feature of PRSPs is the consultative methods that are used to arrive at the overall country plan of action, enabling poor people to participate in setting priorities for poverty reduction.

The PRSPs provide an opportunity for governments and donors to address transport issues that affect poverty in the context of broader plans (Booth and Lucas, 2002; Booth, 2003). Arguably, existing PRSPs show that the role of transport remains weakly articulated, especially with regard to how transport can be better integrated with activities from other sectors in order to have poverty reducing impacts.

There are some good examples of how PRSPs can afford the poor a platform for articulating their transport problems. In Kenya for example, the National Forum Group on Transport was able to ensure that some pro-poor transport issues went into the PRSP.[15] An important outcome of this was the reduction of import duty on bicycles. This has the potential for increasing bicycle ownership among poor people, contributing to poverty reduction through enhanced mobility and increased opportunities for income generation.

In relation to social capital, the World Bank PRSP Sourcebook includes a chapter on 'social protection' (Coudouel *et al*, 2001) which makes recommendations for an appropriate mix of social protection programmes and policies to best contribute to poverty reduction. It states that risk management strategies should "include actions to reduce the likelihood that certain risks will occur, to mitigate risk by reducing the negative consequences associated with an event and to help the poor cope with the residual effects of the shock so that they do not suffer irreversible negative effects" (Coudouel *et al*, 2001, p.165).

Such interventions include social funds through which grant funding is channelled to small-scale projects to help poor communities design and implement their own projects to meet their self-defined needs (such as the Social Recovery Project in Zambia, see Section 4.7.2, Chapter 4). Informal arrangements are also cited as a social protection intervention in the Sourcebook, defined as support for community or family members through informal insurance arrangements (Coudouel *et al*, 2001). Arrangements include marriage, children, community support, savings or investment in human, physical and social capital (rituals, reciprocal gift giving). The objective of the technical notes, is to aid policymakers in choosing the mix of social protection policies and programmes to meet national goals determined by the Poverty Reduction Strategy (Coudouel *et al*, 2001). However, as with the PRSPs themselves, there appears to be an inherent lack of evidence as to how social protection interventions will actually achieve poverty reduction in practice.

[15] Personal communication with Peter Njenga, IFRTD East Africa, June 2003.

2.8.4 Sector wide approaches

A Sector Wide Approach (SWAp) is one in which funding for the sector supports a single policy and expenditure programme under government leadership, and adopting common approaches across the sector (Norton and Bird, 1998; Brown et al, 2001; Foster and Mackintosh-Walker, 2001; DFID, 2003). A SWAp should ideally involve broad stakeholder consultation in the design of a coherent sector programme at micro, meso and macro levels, and strong co-ordination among donors and between donors and government (DFID, 2003).

The poverty reduction strategy processes that form the current basis for World Bank and IMF concessional lending and for the conversion of debt into aid are expected to draw heavily on consultative approaches such as participatory poverty assessments, and to be cross-sectoral in scope. They present both challenges and opportunities for SWAps, because (DFID, 2003):

- They require broad consistency between what is planned within-sector (SWAp) and across sectors (PRS processes)
- SWAps may themselves become a mechanism to implement PRS processes.

According to DFID (2003) SWAps have a key place in the 'new architecture of aid' and will be instrumental in achieving national and international development targets, through improved stakeholder buy-in, implementation, monitoring and accountability.

2.9 Summary and Concluding Remarks

In summary, this review of literature attempts to demonstrate that effective rural transport policies need to go beyond the technical and economic aspects that traditionally predominate in the sector. Of particular importance in the context of this thesis is the relationship between access and Sustainable Livelihoods Approaches, paying particular attention to social capital, and the role that transport plays in reinforcing this relationship.

One major finding of both the empirical case studies and literature review is that communities have their own mechanisms for addressing vulnerability including (Frankenberger and Garrett, 1999):

- Risk minimising strategies
- Loss management strategies
- Asset substitution strategies

Social capital can be invaluable in reinforcing these livelihood strategies but they still require physical access. The following questions arise when exploring the relationship between transport and social capital:

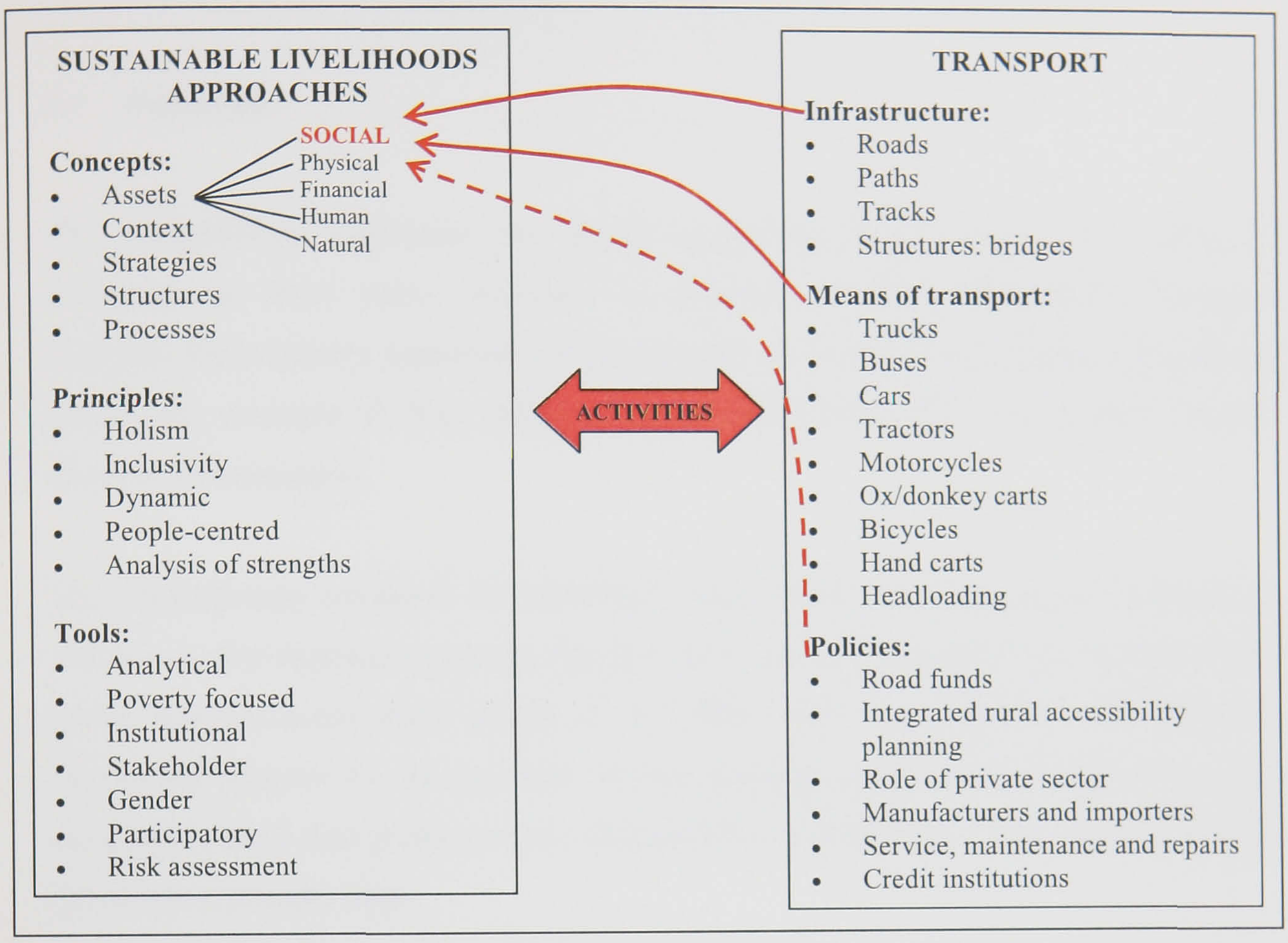
- How do the rural poor access different types of social capital?
- What investments do they make for maintaining social links?
- What are the returns on their investment?

Chapters 4 and 5 explore peripheral questions relating to the fundamental issue of the relationship between the SLA and transport, drawing on fieldwork from Zambia and Cameroon. These include the use of geographic transport space by the rural poor, the failings of transport demand and supply mechanisms in a rural context, the transport needs and constraints of the poor and associated multiplier effects, including income generating capabilities and service provision.

The remainder of this thesis aims to provide a better understanding of social trip-making, and associated mobility characteristics that facilitate movement with the objective of social capital growth; and unpacks the theoretical concept of social capital using material from empirical research undertaken in Kenya.

The schematic diagram in Figure 2.2 encapsulates the process by which transport can inform Sustainable Livelihoods Approaches and vice versa, focusing specifically on the premise of social capital as being a fundamental product of interaction and access that transport facilitates.

Figure 2.2: Putting the research into context



CHAPTER 3: METHODOLOGY

3.1 Rationale

The Methodology constitutes the design component of the thesis, and begins by revisiting the three major traditions in development being researched: Transport Analysis, Participatory Appraisal and Sustainable Livelihoods Approaches. The values, beliefs and concepts of these traditions have been discussed in the previous Chapter (Review of Literature).

The Methodology examines the historical 'entry point' for these major traditions in relation to development spanning the last fifty years. It describes the positivist and social constructionist tools (Laws *et al*, 2003), and the inductive and deductive approaches adopted by the research. It then provides a detailed account of the field sampling in each case study country, and specific methods used to elicit qualitative and quantitative primary data.

The Chapter begins with two Tables. Table 3.1 summarises when each of these development traditions emerged and the major events that provide the foundations for rural development.

Table 3.2 provides a broad outline of the tools adopted for this investigation.

Table 3.1: Major events in development tradition and the transport sector

Decade	Emerging development traditions
1920s	Lord Lugard instrumental in promoting economic advancement in Sub-Saharan Africa with rail and road infrastructure under British colonial rule.
1940s	The United Nations succeeded the League of Nations (1945).
1950s	Transport planning rooted in the modernisation paradigm and growing industrialisation – transport being key to installing modern market institutions. Official development assistance emerged, channelled through bi-lateral and multi-lateral agencies, inspired by the Marshall Plan. Hirschman's theory (1958) – transport investment acting as a development initiator or catalyst.
1960s	The Organisation for Economic Co-operation and Development, OECD established (1961). United States Agency for International Development, USAID established (1961). Ministry of Overseas Development, UK established (1962). Cost benefit analysis became widely used as the principle tool for road planning and investment by International Development Agencies (Lebo and Schelling, 2001). Deductive ('Top-down') approach to infrastructure development based on Lewisian theory – economic growth and expansion of road systems and trading ports.
1970s	Wilson's theory (1973) – linking transport and development with the notion that economic and social development will be generated where 'prior dynamism' exists.
1980s	Boserup's theory (1981) – the availability of transport being conditioned by population density. Structural adjustment policy (SAP) introduced by the IMF and World Bank –

loans to developing countries made conditional on the implementation of SAPs (Bretton Woods Project, 2001).

Chambers (1983) links rural poverty to isolation – the spatial bias of 'urban', 'tarmac' and 'roadside'.

Emergence of participatory appraisal (PRA and RRA) as a 'social constructionist' method of people centred research, stemming from social anthropology and the work of Gordon Conway and Robert Chambers (IDS, 2000).

Integrated Rural Accessibility Planning (IRAP) propounded by the International Labour Organization to provide synergies between transport and more general development planning for access to schools, health centres, markets etc (Dixon-Fyle, 1998).

1990s

Sustainable Livelihoods Approaches (SLA) developed as an analytical tool advocating a holistic, participatory and sustainable approach to development (Livelihoods Connect, 2004).

Sector Wide Approaches (SWAps) evolved where funding for the sector supports a single policy and expenditure programme, under government leadership, and adopting common approaches across the sector (DFID, 2003).

Poverty Reduction Strategy Papers introduced in 1999 by the IMF and World Bank as the new framework for developing countries to prioritise poverty reduction measures (World Bank, 2004c).

2000s

Millennium Development Goals (MDGs) agreed to by the world's governments at the Millennium Summit (2000) with objective of halving extreme poverty by 2015. Transport and accessibility are not explicitly referred to in the MDG targets, but are instrumental in the achievement of other targets (MDG, 2003; DFID, 2002b).

Table 3.2: Tools employed during the research

Transport Analysis	Participatory Appraisal	Sustainable Livelihoods Approaches
▪ Questionnaires ▪ Household surveys ▪ Travel diary	▪ Diagramming ▪ Mapping ▪ Calendars ▪ Trend analysis ▪ Ranking ▪ Transects	▪ Sustainable livelihoods analysis ▪ Key informant interviews ▪ Focus group discussions
Positivist approach		**Social constructionist approach**

The remainder of this Chapter will describe the qualitative and quantitative methods adopted, and how they were employed in each country.

3.2 Observation

It is important to note my role as a researcher, and the relationship between 'the researcher and the researched'. An observer can alter what is being observed as a result a) of their own cultural background and ethnicity, and b) their physical presence in a social situation can alter behaviour. The social constructionist tradition accepts that there will always be an influence on research from the researchers own values, beliefs and interests (Laws *et al*, 2003). Through *reflexivity*, the researcher can control the extent to which their expectations influence the interpretation of their data (Laws *et al*, 2003).

In the context of this thesis, the researcher's perspective is that of a white twenty-something female researcher from the middle-class, in urban Britain. The bias of such a researcher is unavoidable, especially since there is a risk of assumptions being made without a true understanding of the behaviour and culture of the people being studied. For instance, the approach to investigating *social capital* in this thesis was through in-depth analysis, whereas local people took social capital as a given. Nevertheless, this research did not set out to be an anthropological study. Rather, as a student, researcher

and consultant, it presented an opportunity to bring multiple roles into the research, and to manage and understand any objectivity and bias that emerged from the research.

3.3 Ethical Issues

Laws *et al* (2003) highlight the obligations of researchers to protect the physical, social and psychological well-being of people involved in the field study. Ethical considerations adopted by this research included (Laws *et al*, 2003):

- **Wasting people's time**: *in order to compensate survey recipients for their time spent away from productive activities, a gift was made to the head of villages surveyed, for distribution to participants. Before the field study began in each country, the researcher also established that surveys had not previously been undertaken in the survey villages, thus limiting the potential for survey fatigue*
- **Obtaining informed consent**: *Consent of the village leader to carry out household surveys and focus groups was sought during site selection. Before the surveys commenced details of the research purpose, sponsors and consequences of the study were provided, and permission from respondents*[16] *to discuss their livelihoods was obtained*
- **Raising expectations**: *At the start of each village survey, the purpose of the research, to learn from and understand the livelihood issues of rural inhabitants, was conveyed to participants of the survey. They were informed that the research outcomes were unlikely to result in interventions for their village, but rather in contributing to a wider body of knowledge with the potential for influencing policy*
- **Rights to confidentiality**: *To respect the privacy and confidentiality of respondents, the names of individuals featured in the study (see Box 7.1 to 7.5, Chapter 7) were altered.*

3.4 Case Study Site Selection

The case study countries were selected from different regions of Sub-Saharan Africa to reflect the varying cultural, geographical, socio-economic and poverty features that are

[16] 'Respondent' refers to people who give information as part of research exercises. They may be interviewed, take part in a group discussion or complete a questionnaire themselves (Laws *et al*, 2003).

characteristic of Western, Eastern and Southern Africa (see Figure 3.1 for map of case study countries). The research in Zambia and Cameroon was undertaken as part of a project entitled *The Policy Toolkit for Increased Rural Mobility* carried out on behalf of DFID. The objective of the project was to promote a sustainable improvement in rural transport through the adoption of a livelihoods-focused policy 'toolkit'. The countries were selected in order to examine livelihoods in both a predominantly rural Anglophone heavily indebted poor country (Zambia), and in a highly urbanised Francophone HIPC (Cameroon).

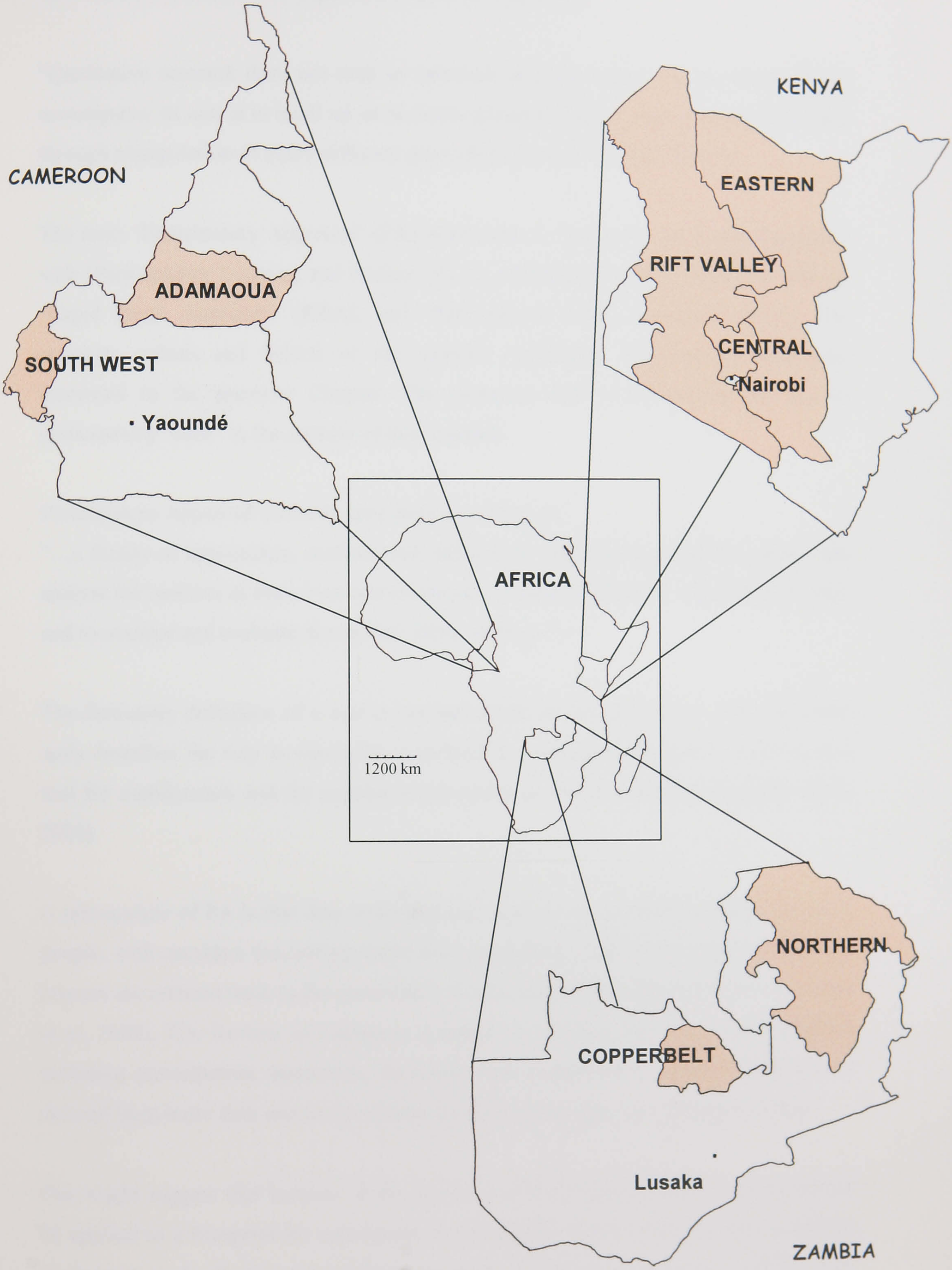
Two years later an opportunity arose to collaborate with an international transport development organisation based in Kenya who were conducting DFID funded research on the provision of rural transport services. The Kenya Network for Draught Animal Technology (KENDAT) allowed contribution to their research project with survey instruments that specifically targeted household characteristics of social trip-making and associated social capital networks.

Following country selection, advice was sought from the Ministry of Transport in Zambia and Cameroon to decide on suitable administrative districts within two provinces in each country, in which to conduct the field surveys. For both countries very disparate provinces were chosen, based on their contrasting geographical, climatic, ethnic, religious and socio-economic characteristics. Hence, in Zambia a very poor, low density rural province was selected (Northern), contrasted with the less poor, more urbanised province situated in a resource rich area (Copperbelt). Similarly, in Cameroon, the area of highest rainfall, boasting rain forests and export crops, and home to the minority group of English speakers (Southwest) was selected, along with a province in the North, which is characterised by semi-arid plains and a French speaking Muslim population (Adamaoua).

Likewise, for reviewing the dynamics of social capital and trip-making, contribution to the RTS project in Kenya covered four districts in three provinces (Central, Eastern and Rift Valley) with variable population densities, a diversity of transport means and services and varying levels of agricultural output. Maps showing the provinces and districts under survey in all three countries can be found in their respective case study chapters.

The next sections describe the process by which qualitative and quantitative methods were adopted, beginning with Participatory Appraisal in Section 3.5.

Figure 3.1: Map of case study countries



3.5 Qualitative Methodology: Participatory Appraisal

"Qualitative research does not seek to establish absolute values for the things that it investigates; its aim is to build up an accurate interpretation of what is being researched through triangulation of many different descriptive sources" (DFID, 2001b).

The term 'Participatory Appraisal' (PA) is one that is frequently used interchangeably with 'Participatory Learning and Action' (PLA), 'Participatory Rural Appraisal' (PRA), 'Rapid Rural Appraisal' (RRA), and 'Participatory Urban Analysis' (PUA). The concepts, values and beliefs of this popular qualitative methodology have been discussed in the previous Chapter. The intention here is to describe the use of participatory 'tools' in the context of this research.

Participatory Appraisal methods have been described as:
"…a family of approaches, methods and behaviours that enable people to express and analyse the realities of their lives and conditions, to plan themselves what action to take, and to monitor and evaluate the results" (IDS, 1996, p.1).

The dictionary definition of a *tool* is 'an instrument of use or service'. This definition aptly describes the way in which PA is utilised in conducting livelihoods analysis, as a tool for mobilisation and for popular involvement in decision-making processes (IDS, 2003).

A prerequisite of PA is that data collection and analysis are undertaken with or by local people, with outsiders facilitating rather than controlling. Outcomes of the participatory process are referred back to the community in a process of learning and reflection (Laws *et al*, 2003). The Review of Literature (Chapter 2) refers to the key principles of PA including participation, teamwork, flexibility and triangulation, where information is derived from more than one tool to ensure the qualitative data are valid and reliable.

One might suggest that because of the diversity of participatory tools, they should not be applied as a blueprint for community development. Rather, they are able to inform the learning and reflective process in the research and help respondents to visualise both

problems and solutions.[17] Figures 3.2 to 3.9 describe a sample of typical PA tools that were used in this research.

[17] The following references and websites provide invaluable resources on participatory appraisal:
Participation Resource Centre at IDS: www.ids.ac.uk/ids/particip
Participatory Learning and Action Notes at IIED: www.iied.org/sarl/pla_notes/index.html
Eldis: gateway to development information: www.eldis.org/participation/index.htm
The Participation Toolkit: www.toolkitparticipation.nl/index2.htm
Participation and Civic Engagement at World Bank: www.worldbank.org/participation

Cooke, B. and Kothari, U. (2001). Participation: the new tyranny? *London: Zed Books*

Joachim, T. and Grady, H. (1991). Participatory rapid appraisal for community development. *London : International Institute for Environment and Development*

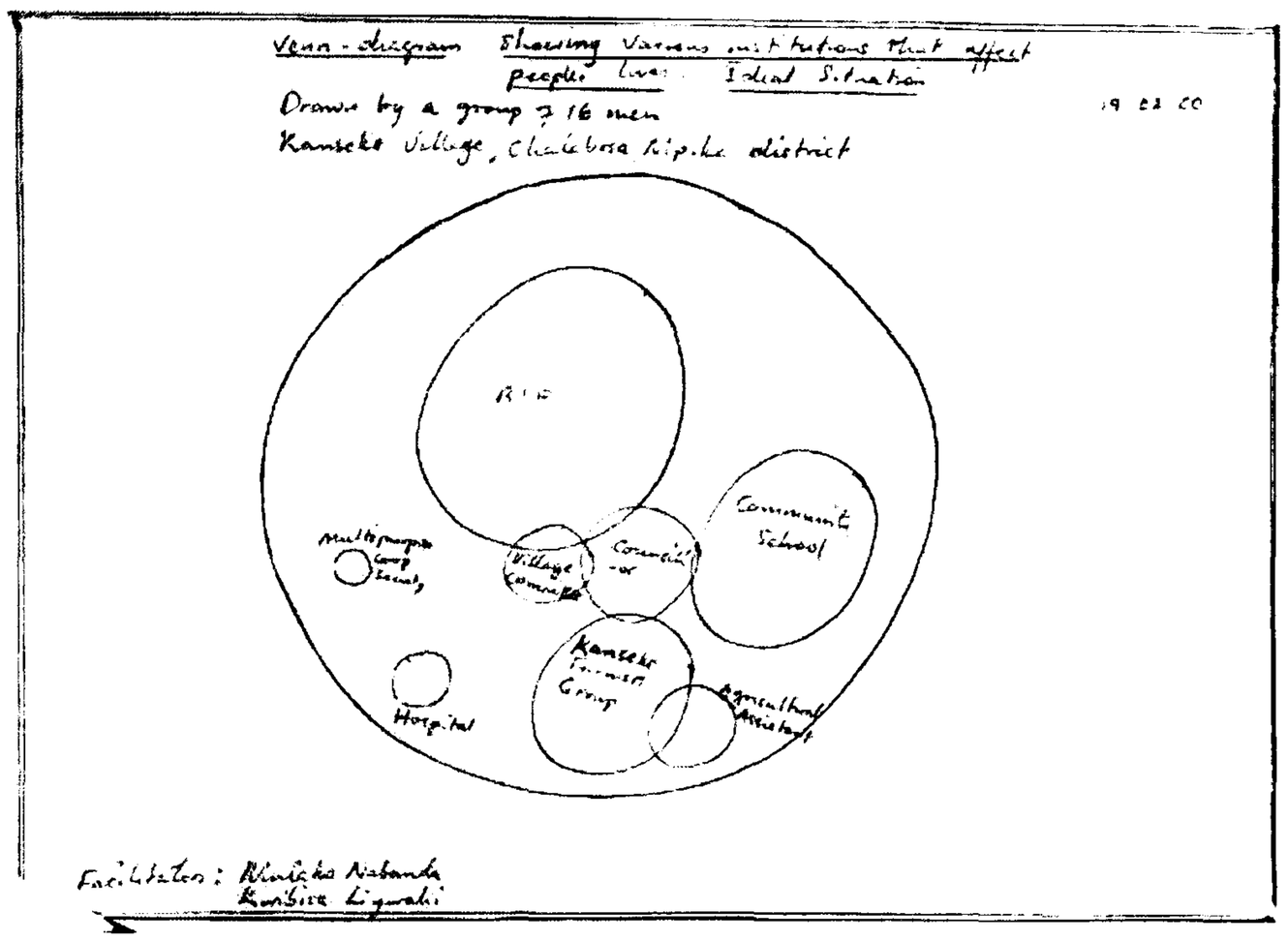
Mikkelsen, B. (1995). Methods for development work and research. New Delhi: Sage Publications

Pretty, J. *et al* (1995). A trainer's guide for participatory learning and action. *London: International Institute for Environment and Development*

Figure 3.2: Venn diagram

Venn diagrams: depict key institutions, organisations and individuals, and their interaction with the local community. Key players in decision making are shown, and institutions analysed can be both local ones internal to the community, and external ones that have a local influence. Each institution is usually represented by a circle. The size of the circle represents the importance, significance or power of that institution, and the degree of overlap between the circles represents the level of interaction that occurs. In a rural transport context, venn diagrams can be used to demonstrate the interaction between local villagers, transport operators and local government as in the example from Kanseka village in Zambia below.

Ideal Situation



Actual Situation

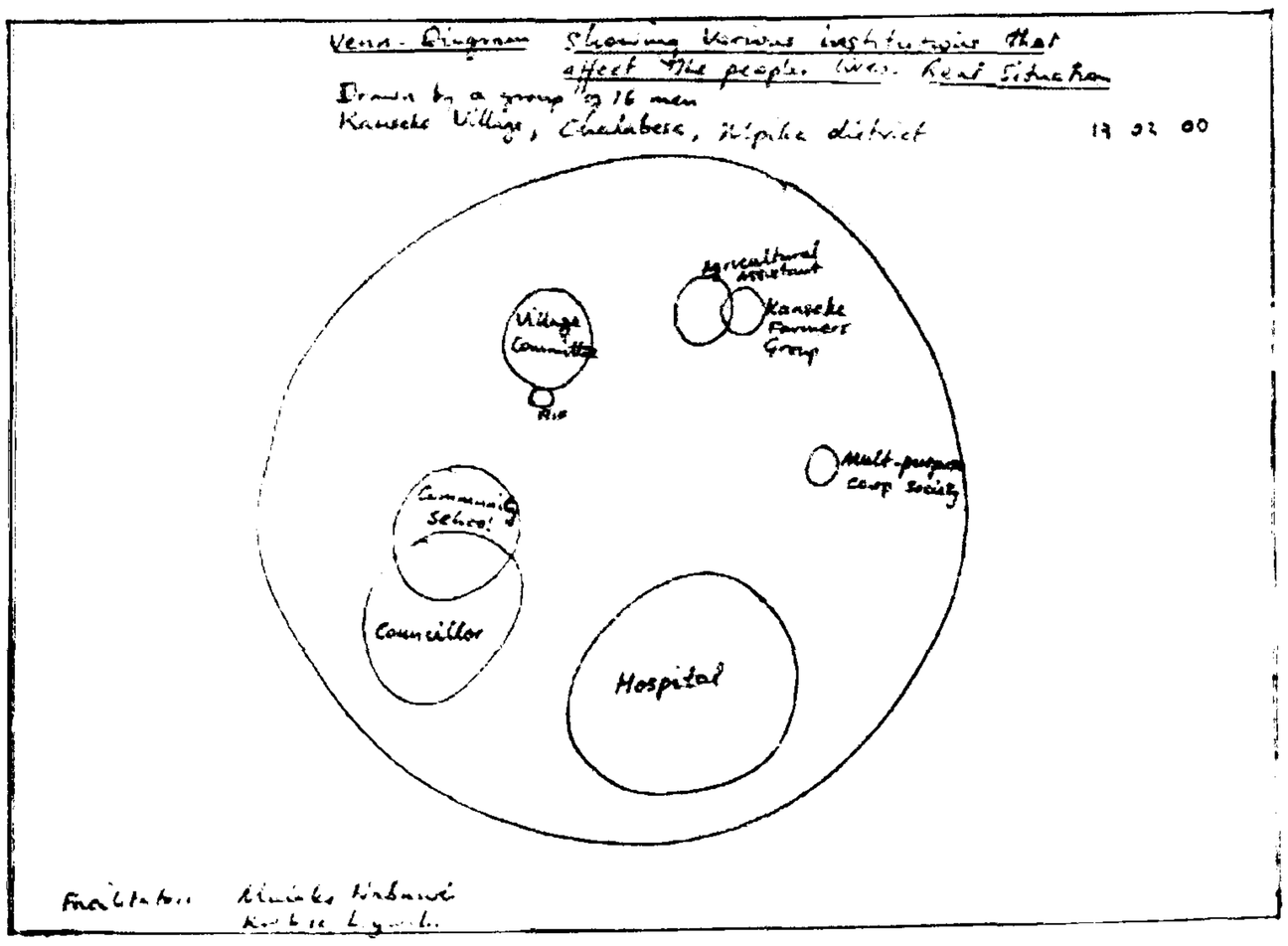


Figure 3.3: Social/resource mapping

Social / Resource mapping: Maps were used to identify the comparative location and importance of different resources within the community, and to locate land-use, houses, services and infrastructure. Maps were used as a visual stimulant, to identify the parameters faced by local people and to facilitate discussion about the importance people place on infrastructure and transport service provision as in the example below from Hangloa village, Cameroon.

Figure 3.4: Discussion starters

Discussion Starters: When discussing transport issues with the communities, visual aids proved a useful mechanism for generating debate and obtaining ancillary information. Laminated photographs showing different types of IMT gave rise to commentary in Northern Province, Zambia, relating to the utility of intermediate modes and their effectiveness under different climatic conditions.

Transect Walk: A transverse across the community with a group of key informants to identify and analyse land and transport use, as well as problems and constraints in the community was also adopted in Mukuka Mfumu, Zambia (Figure 3.5). The researchers and informants proceeded along a transect of 1.5 km observing prominent characteristics along the way. Afterwards, the community members helped the facilitator reproduce the transect diagram.

Figure 3.5: Transect walk

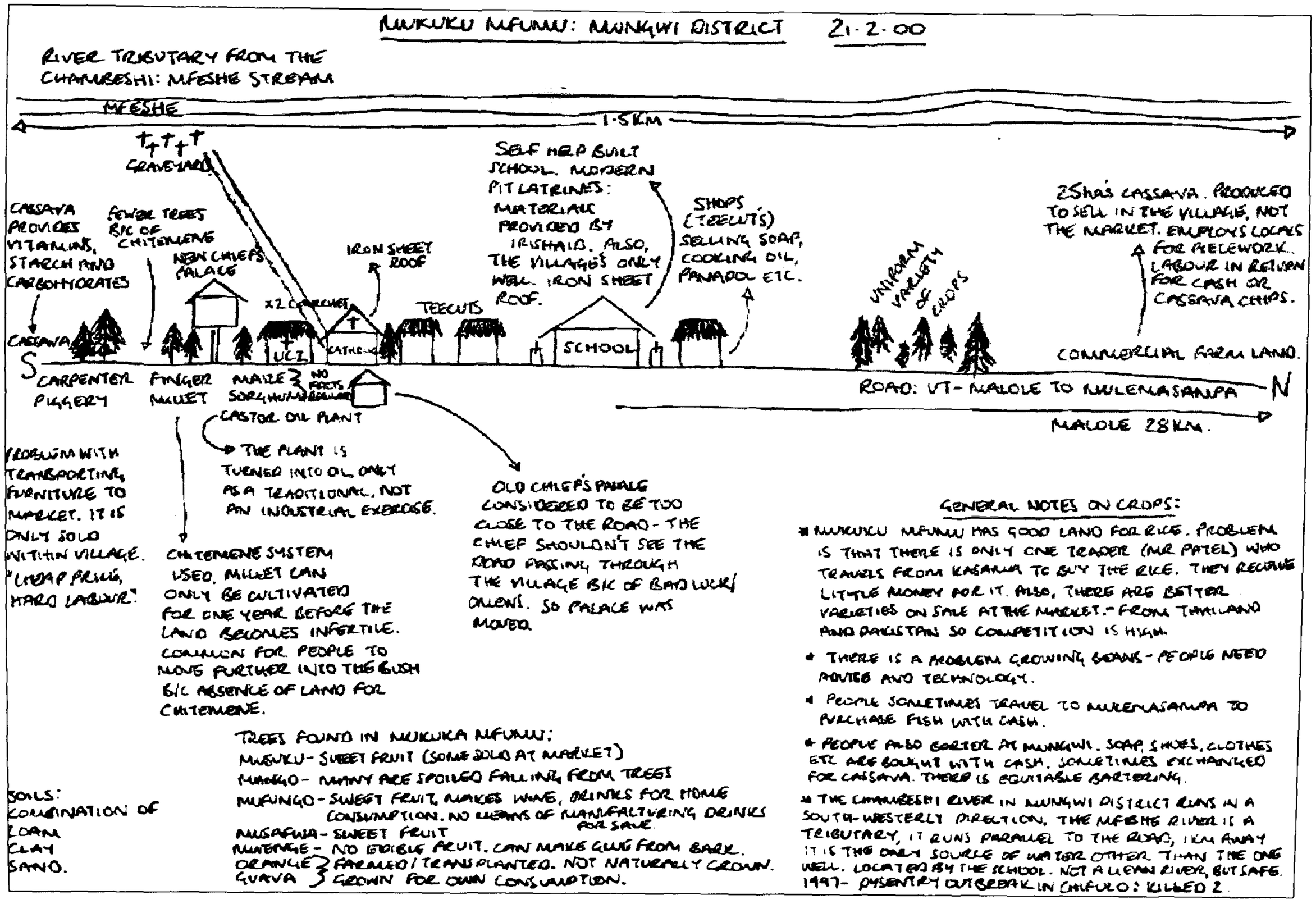


Figure 3.6: Trend analysis

Trend Analysis: a tool for presenting data collected as indicators of change was used in Kashete and Mulenga villages, Zambia. A time line was used to record changes over time by a community, highlighting historical events. Seasonal calendars can also be used to record seasonal factors or activities within a community. Trend analysis tools can be presented as a bar chart, a transect through time, or as a series of pictures depicting the nature of change.

Time	Transport and Travel Means
1945	Used to walk on foot to the Copperbelt to seek employment
1948	People started owning bicycles
1950	Start of vehicular transport with bus from Mufulira to Luwingu
1955	People started buying more bicycles enabling transport to and from other settlements
1960	Bicycle use continued with travel to Luwingu
1970	Improved farming generated surplus income for bicycle purchase
1980	Agricultural production improved further due to fertiliser availability – a vehicle from Northern Co-operative Union (NCU) started collecting produce from the villages, but stopped coming after continuously getting stuck in the mud
1984	NCU trucks transporting fertiliser and agricultural inputs stopped visiting the area.

Figure 3.7: Mobility chart

Mobility charts*:* a tool utilised for discerning trip distance, destination, frequency and modal choice of daily income and non-income earning activities presented in a schematic diagram. The chart was drawn in Nkoumbol-Kognoli, Cameroon as a spider diagram, with participants drawing arrows from their 'household' at the centre of the diagram in varying thickness and colour to denote frequency of trips and different transport modes respectively. The arrow points towards a drawing, which represents a particular activity for which the journey has been made.

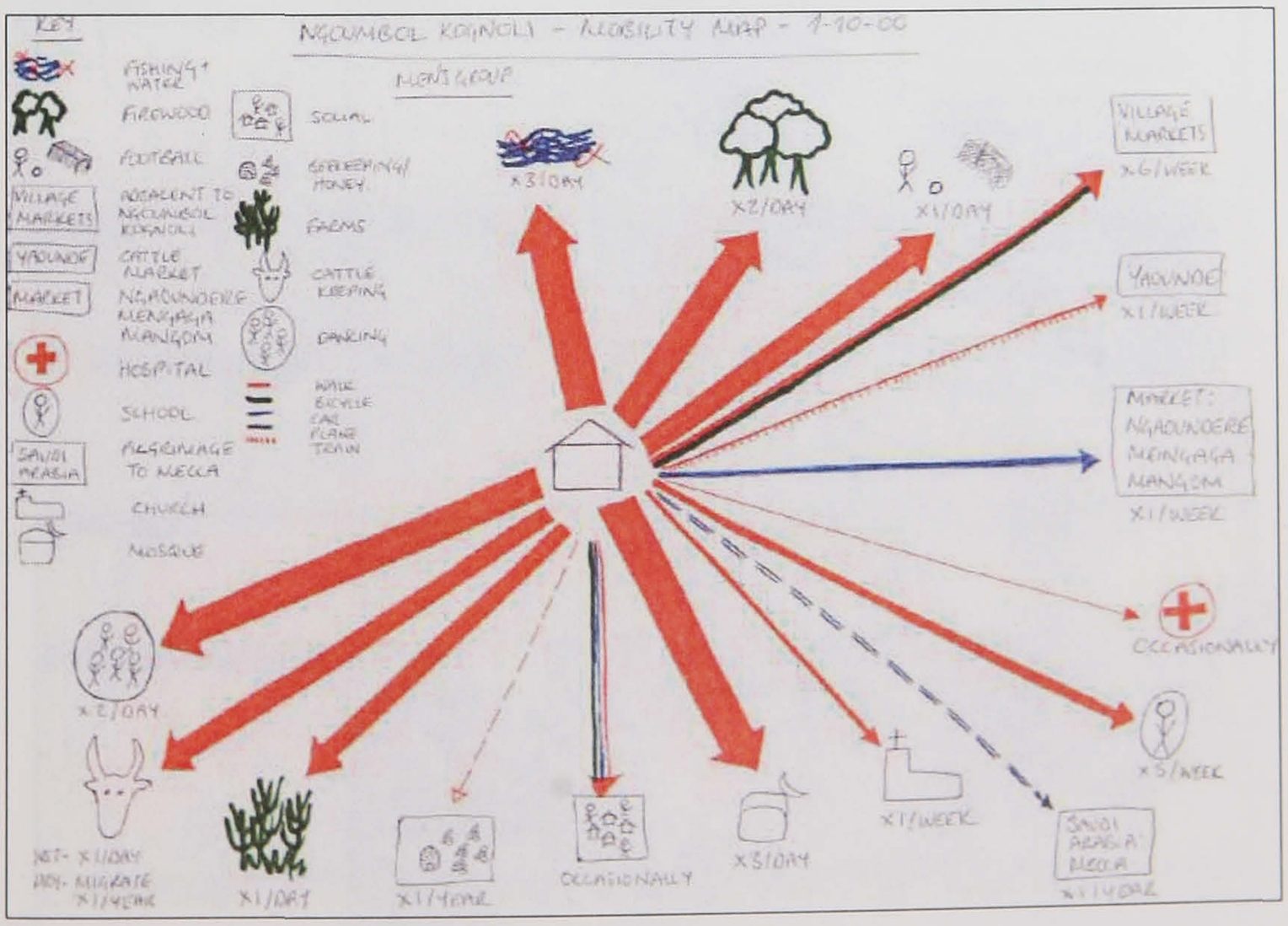
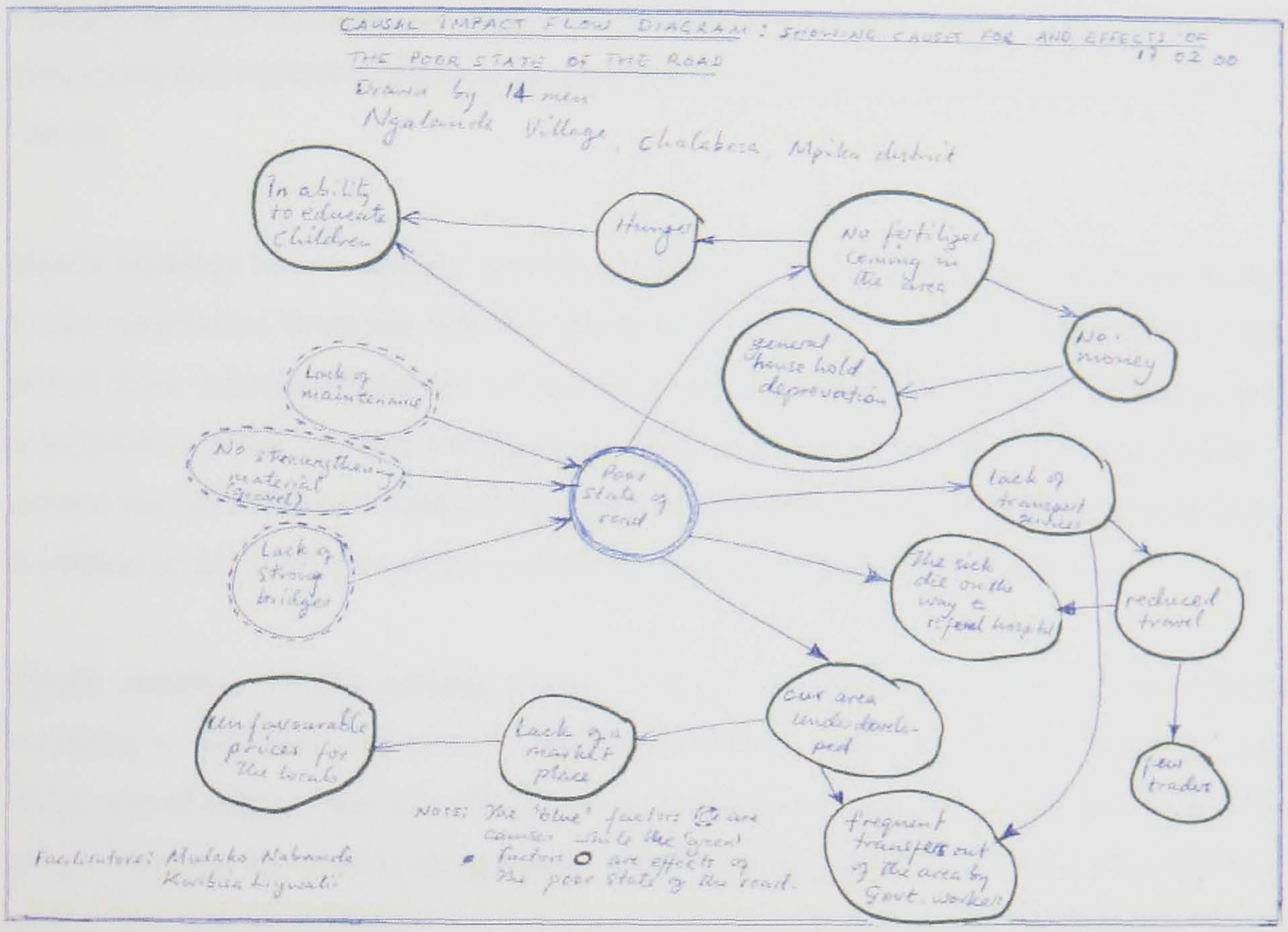


Figure 3.8: Causal impact analysis

Causal Impact Analysis: used to probe into the cause and effect of particularly acute problems faced by communities, their strategy for alleviating the impact of these problems, and their prioritisation for problems that require external intervention most urgently. This was achieved in Ngalande village, Zambia by using a flow diagram with the problem statement at the centre and cause and effects of the problem emanating from the midpoint, and in tabular format in Bavenga village, Cameroon.



Problem	Causes	Livelihood Strategy	Solutions
1. Water	Nature	*Rain water collected during wet season. *Travel 2km to buy water from Ikata. *Water from stream - 4km.	*Galvanised pipe & reservoir to collect water that flows down the mountain from Matango - 8km away.
2. Road	Lack of maintenance	*Manpower (headload) *Community labour to maintain road monthly.	*Improved maintenance by Govt & extension of roads to farm land.
3. Transport Services	Lack of road	*pay high fares for transport which is infrequent. *Manpower (headload)	*Road maintenance *Provision of IMTs.
4. Electricity	Requires Govt funding	*Use of bush lamps & firewood for light. *Torch.	*Appeal to Govt.
5. Chemical Pesticides	Costly & inaccessible Supply does not exceed demand "many people are duped by sellers"	*Purchase at high cost & transport to village.	*Common initiative groups to collectively purchase chemicals. *needs to be a registered supplier of chemicals.
6. Crop Pricing	No stable cocoa/ coffee prices.	*Forced to sell at market price.	*Co-ops could negotiate a more favourable price.

Figure 3.9: Matrix, pairwise and wealth ranking

Ranking and scoring techniques: Were used in a number of villages to assess people's expectations, beliefs, attitudes, preferences and opinions. Ranking and scoring means placing something in order (Mikkelsen, 1995):

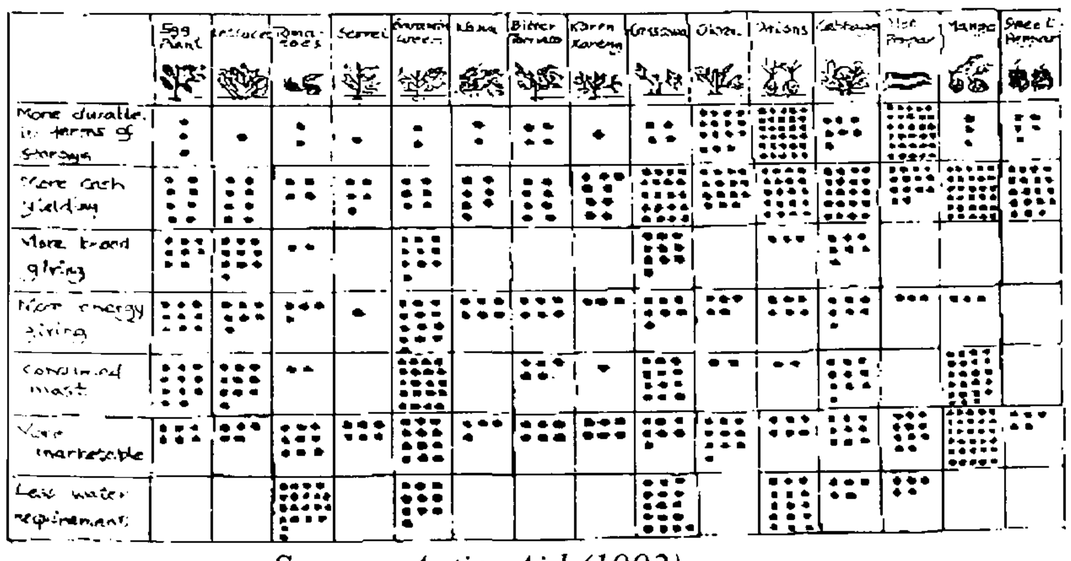
- Ranking: putting in order
- Scoring: weighting differences

This proved to be a useful tool in generating basic information which helped to focus further questioning about journey origin and destination, journey mode, journey purpose, frequency and cost etc.

Matrix ranking: Matrix ranking involves listing key criteria (which have been predetermined by the community) down one side of a matrix table, and the measure by which they are judged, gained from informal discussion or pairwise ranking, across the top. Each element is then considered in terms of each criteria and a score is given on the basis of each criteria. This method was undertaken to establish local perceptions of efficiency for different transport modes in relation to their cost, frequency, availability, energy and time consumption.

Wealth ranking: Wealth ranking enables villagers to divide households in the community according to economic and other 'well-being' categories including animal ownership, type of house, size of family, farm size and bicycle or ox-cart ownership etc. This helped identify target group members for income disaggregated focus groups, specifically the poorest sections of society, but was used infrequently because it caused some discomfort among households who were discussing their neighbours income. Nevertheless, differences in wealth and well-being affect people's perceptions and coping strategies, and it is important to understand this prior to further appraisal or planning.

Matrix Ranking



Source: ActionAid (1992)

Pairwise Ranking

Walking (Preference 1)	Bicycle (Preference 2)	Ox-cart (Preference 3)	Bus (Preference 4)	Car (Preference 5)	ITEM	SCORE	RANK
	Bicycle	Ox-cart	Bus	Car	Walking (Preference 1)	0	E
		Ox-cart	Bicycle	Car	Bicycle (Preference 2)	2	C
			Ox-cart	Car	Ox-cart (Preference 3)	3	B
				Car	Bus (Preference 4)	1	D
					Car (Preference 5)	4	A

Participatory Appraisal typically began with a mapping exercise as an ice breaker and for rapport building, so that participants could describe the resources and facilities in their village, including roads, rivers, wells, farmsteads, houses, health clinics and schools, and to facilitate discussion about trip-making both within and external to the village. While the exercises were not applied systematically in each village, the researchers endeavoured to be consistent in their use of PA and hence a combination of the exercises outlined in Figures 3.2 to 3.9 were adopted in most villages (with the exception of the Kenya case study).

The venn diagrams and ranking exercises proved least popular with participants. Venn diagrams are rather an abstract tool for enquiring about relationships between the community and other institutions and organisations, and ranking exercises required some appreciation of numeracy, even when natural counters such as stones and leaves were used in place of numbers (see Figure 3.9). In contrast, discussion starters were well-liked because participants could view the photographs of different intermediate means of transport and no numeracy or literacy was required. Similarly, the transect walk allowed the community to conduct a tour of the village and highlight the precise location of different resources already discussed in the mapping exercise.

In addition to the tools described in Figures 3.2 to 3.9, focus group discussions and stakeholder interviews were undertaken with transport users, district officials, school teachers and rural health clinic personnel. Interviews were also undertaken with a range of stakeholders from different economic and educational backgrounds in Kenya, including nurses, farmers, hotel proprietors and transport operators. Outputs of these interviews include extracts that describe the structural and cognitive types of social capital to be found in rural communities (Section 7.4, Chapter 7).

There are few published examples where community participation has been applied in transport projects, due to the slow acceptance by transport practitioners (particularly engineers) of applying qualitative methods to empirical research. Nevertheless, participation of communities at the micro level for prioritising road network rehabilitation has enabled local people to explain the criteria that are most important to them, which might otherwise have been omitted by external technical experts. Indeed, Osborne (1995) records how PA methods were used with the people of Katuba in Zambia where communities were given the opportunity to identify and prioritise their own district feeder road networks. The methodology has subsequently become

standardised, and has been used on all further feeder road improvement programmes undertaken by the Smallholder Development Project (Osborne, 1995).

Similarly, IT Transport revolutionised the approach for rehabilitation and maintenance of rural road networks, with guidelines on 'Community participation in rural transport infrastructure' (Wattam, 1998). The guidelines draw on research conducted in Uganda, Tanzania and Kenya and expound the benefits of using community participation in the decision making process, in particular their cost effectiveness, generation of improved cash income opportunities, skills development and a greater sense of ownership for the beneficiaries. The benefits of community participation particularly apply to routine maintenance, which suits the skills profile of farming communities, and can be adapted to fit in with the agricultural calendar (Wattam, 1998).

Sustainable Livelihoods Approaches build on the success of participatory methods in making local-level development initiatives much more people centred. SL Approaches do not apply *new* participatory methods, but require that existing methods be used to obtain a wide view of assets, options and constraints to the advancement of the poor rather than narrow sectoral initiatives (DFID, 2001b).

Participatory methods were employed in this research to identify priorities for community development. In contrast, questionnaire surveys were used to generate comparative data that could be quantified among villages, provinces and countries. Data compiled from the questionnaires allowed for consistency across survey sites, while the participatory exercises were more flexible in their application and allowed for triangulation across the sample (Laws *et al*, 2003). Sustainable livelihoods analysis was carried out in order to capture the range of data acquired from quantitative surveys and PA exercises and to represent it in the context of a Sustainable Livelihoods Framework.

3.6 Quantitative Methodology: Questionnaire Surveys

"Quantitative research seeks to place reasonably firm, absolute levels or values on the things that it investigates" (DFID, 2001b).

A combination of qualitative participatory techniques, used alongside quantitative questionnaire surveys, were utilised in the collection of field data to ensure the validity

and reliability of data acquired, and to facilitate a reciprocal process of learning and feedback between the survey team and target communities. DFID (2001b) advocates a combination of qualitative and quantitative research methods for effective livelihoods analysis and indicates that adoption of an SL Approach can lead to "tension arising between *extractive* and *empowering* objectives of various field methods." Yet, in the context of this research, the objectives of the two are complementary rather than conflicting.

The dangers of depending on formal sample surveys are well documented. For example, Ellis (2000) criticises a reliance on one-visit questionnaires for data collection which yield dubious results and can make significant errors when misrepresenting household income and expenditure and failing to enquire about absent household members. Scheyvens and Storey (2003, p.50) also review some limitations of quantitative methods, including the misrepresentation of data, for which they suggest that the "leap from correlation to causation should be made with great caution." Indeed, they emphasise the strengths of quantitative data analysis in describing the *what* but weak in explaining the *why*... "it is good at predicting what will happen, the magnitude of changes and the relationship between variables but not why things occur" (Scheyvens and Storey, 2003, p.54).

Ellis (2000, p.198) acknowledges that neither conventional questionnaire surveys nor participatory methods provide, as separate packages, a complete approach to investigating livelihood diversity, and that "a combination of the two approaches is required, each serving different but complementary roles within an overall research design." Indeed, analytical tasks cannot be divorced from stakeholder inputs. Where groups are affected by key issues, they should be able to engage in analysis themselves (Dalal-Clayton and Bass, 2002). This research has adopted a combined approach to livelihoods analysis. The baseline data have been elicited from a range of questionnaires to obtain better and more consistent estimates of poverty and capital assets across the sample countries (to provide the benchmark data against which livelihood 'indicators' can be measured).

The quantitative survey instruments used in the three case study countries comprised a series of questionnaires (and a travel diary in Kenya). These provided information on household size and composition, livelihoods and marketing activities, transport requirements, vehicle journeys, availability of social services, and feeder road problems.

The gender bias of the quantitative tools and sample are recognised. The participatory nature of the qualitative methods helps to address these biases, through inclusion of vulnerable groups (e.g. women, youth and elderly).

The questionnaire and participatory surveys have been disaggregated by gender and income, to capture demographic variations in mobility. It was not possible to disaggregate the survey instruments specifically by age, because of the difficulties in interviewing children during the school term. Questionnaires were administered to heads of households, which typically precluded children. However, the age of household members was alluded to in questions about trip-making[18] characteristics (i.e. 'men', 'women', 'boys' and 'girls'). See Appendix A1 to A5 for a sample of quantitative survey instruments:

Village level questionnaire: Village interviews were conducted with the village headman or other senior village member such as village elders or teachers. Information collected at the village level interview related to:

- Village size and demography
- Accessibility to essential facilities and extension services
- Availability of transport into and out of the village
- Farming and other types of economic activity.

Household level questionnaire: Each interview was conducted with the head of the 0household to gain information on:

- Household composition and livelihood
- Household travel patterns
- Trip frequency
- Use of motorised transport.

As most households surveyed did not have any regular income from formal employment but relied on farming, estimates of prosperity and income were based on such parameters as annual crop production, consumption and sales. Generally, the head of household provided information on each household. In his/her absence, any other adult member of the household present at the time of the survey was interviewed.

[18] In all surveys, a trip is defined as continuous physical movement from a point of origin to a stopping point – the intended, or unintended (if waylaid by breakdown or obstacles) destination. Each trip consists of a one-way journey.

Surveys used in Zambia and Cameroon were based broadly on the same questions. The Kenya questionnaire was devised to meet KENDAT's specific objectives and contained different questions. The latter surveys intended to establish problems encountered while making social trips, and identified longitudinal trends in journeys undertaken for maintenance of social networks (such as the duration of stay at the destination).

Transport operator questionnaire: Vehicle operators were interviewed to determine factors affecting their businesses in relation to the routes they travelled on, in particular, the quality and standard of the roads. Such information included:

- Data relating to vehicle type, operating and maintenance costs, and utilisation
- Problems encountered on feeder roads
- Travel patterns in relation to road standard and quality, trip distance and fares.

The target population was public transport vehicle owners or drivers. They were interviewed at the villages, along roads leading to villages, or at selected car parks in towns.

Travel diary:[19] a travel diary administered to a discreet number of households taken from the sample of household questionnaire respondents. Each member of the household completed a logbook of travel over a period of one week, recording:

- Origin/destinations, trip purpose, trip duration, mode of transport
- Household access to vehicles/means of transport
- Income earning trips for one week.

The conditions in which the case studies were conducted, and a description of the local research collaborators and sampling methods are described next.

3.7 Conducting the Case Studies

The fieldwork for this research has inevitably been shaped by the projects for which the case studies were undertaken. Hence, the site selection, use of local collaborators, time available to conduct the case studies, sampling approaches and methods for analysis

[19] Travel diaries were only used in the Kenya case study.

were largely influenced by the project objectives mentioned in Sections 3.4 and 7.1. These projects provided the necessary financial backing for the case studies and opportunities to work with country based collaborators recommended to or previously known by the candidate's employer, TRL. However, the projects undoubtedly placed constraints on the fieldwork including time restrictions and limitations regarding the number of participatory exercises undertaken (most notably semi-structured interviews and focus group discussions) and the consistency with which they were adopted in each village, province and country. In addition, sampling of the target population was also affected by the research projects, for example age was discounted as a sampling variable because it was not a requisite of the projects (see Section 3.8). Resources did not allow for more facilitators to separate focus groups by age or other taxonomic categories, or when groups became too large and unmanageable (please refer to Section 3.10 for lessons learnt from the fieldwork).

In all countries the local collaborators were selected on the basis of previous experience, local knowledge, application of participatory appraisal, recommendation from development practitioners, and were all local dialect speakers. In both Zambia and Cameroon the PA exercises were conducted by two practitioners under the direction of the candidate, one to facilitate and help with the visual tools and the other to take comprehensive notes and verbatim remarks.

In Zambia, the PA practitioners were independent specialists recommended by the Department of Economics, University of Zambia who conducted the quantitative household, village and transport operator surveys. In Cameroon, the PA exercises were carried out by collaborators from the Rural Travel and Transport Program at the Ministry of Transport, while the quantitative surveys were co-ordinated by an independent specialist, now with the Economic Commission for Africa. In Kenya the household surveys and family logbooks were organised by staff at KENDAT.

While the PA facilitators were all male, a number of the survey enumerators were female. The gendered bias of the survey team was unavoidable due to time restrictions preventing a search for refereed female PA practitioners, nevertheless it did not prove to be a constraint when facilitating the female focus groups. In all cases the facilitators came from the capital city of each country and were university educated, the enumerators largely consisted of university graduates. The candidate participated in all

PA exercises, and during some household interviews and was able to make general observations of the proceedings despite the language barrier.

Time constraints led to the adoption of a more rapid appraisal, with up to three days spent in each village for PA exercises. During their time in each village, the qualitative research team (comprising two PA practitioners and the candidate in each country) typically stayed in the villages, either camping in tents (as in Zambia) or in local guest houses (as in Cameroon). This close proximity helped form a trust relationship with villagers and allowed for additional observation at dawn and dusk when principle transport activities took place (such as travel to farms and markets, water and firewood collection etc). The enumerators worked independently, moving between villages and spending approximately an hour with each household and with village elders to complete the household and village level questionnaires. Transport operators were questioned on an ad hoc basis, at bus parks and en route to villages under survey.

Participatory Appraisal mostly took place outside under the shade of a tree, using natural markers (leaves, stones, sticks etc), or under the shelter of the village church or meeting place when it rained, using flip charts and marker pens. Facilitators recorded the discussions on paper as tape recording would have proven a high risk method of data recording and would require additional transcription. The PA exercises were transferred from the ground or flip chart to paper and any text translated into English, and a feedback session took place between the candidate and facilitators following completion of the fieldwork in each village to discuss points of clarification and drawing out themes from the exercises. In all case study countries, the quantitative data was entered into an Excel spreadsheet and provided with the completed questionnaire forms for the candidate to undertake data cleaning and analysis (see Section 3.9).

A summary of case study locations and methodological tools adopted in each country is provided in Section 3.8.

3.8 Case Study Countries

The cross-sectional surveys were undertaken in two provinces each in Zambia (January to March 2000) and Cameroon (September to October 2000), and in three provinces in Kenya (October 2002). The principle objective of the 'snapshot' surveys was to identify

the transport constraints of the rural poor, and ways in which transport impacts on the provision of services (principally health and education), and income generation (principally derived from agricultural marketing). Quantitative (questionnaire) and qualitative (participatory appraisal) surveys were implemented. The survey tools and instruments used in the case studies have been described in previous sections.

Table 3.3 below indicates which tools were adopted for use in the three case study countries, disaggregated by gender. These data were not classed by age a) because it was not a sampling requisite of the research projects from which these data were derived, and b) the logistics of mobilising school children to attend lengthy participatory discussions was beyond the scope of the study.

Table 3.3: Methodological tools utilised in the case study countries

		Case Study Countries					
		Zambia		Cameroon		Kenya	
	Methodological Tools	M	F	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household	✓	✓	✓	✓	✓	✓
	Village	✓		✓			
	Transport operator	✓		✓			
	Travel diary					✓	✓
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions					✓	✓
	Semi-structured interviews	✓	✓	✓	✓	✓	✓
	Triangulation[20] (methodological)	✓	✓	✓	✓	✓	✓
	Observation	✓	✓	✓	✓	✓	✓
	Mapping			✓	✓		
	Causal impact analysis	✓	✓	✓	✓		
	Mobility charts	✓	✓	✓	✓		
	Discussion starters	✓		✓			
	Ranking exercises	✓	✓				
	Venn diagrams	✓	✓	✓	✓		
	Daily activity chart	✓	✓	✓	✓		
	Transect line	✓		✓	✓		
	Seasonal diagram			✓	✓		
	Income/expenditure matrix			✓	✓		
	Timeline	✓					

Key: M = Male F = Female

Note: ✓ denotes which approaches were used during the surveys

[20] Triangulation refers to the use of different methodologies and techniques to verify and validate data acquired from a survey (Mikkelsen, 1995; Laws *et al*, 2003).

In the main, villages were selected by local 'gatekeepers' (mostly government representatives) who had sufficient knowledge about the local communities to make an informed decision based on loose criteria such as the number of households per village, proximity to a main road and transport services, and accessibility by the research team. Sampling of community members for the PA exercises was not conducted in a very robust manner, as the research team were somewhat reliant on village leaders to select villagers of mixed age, gender and income as a matter of protocol, and also because the leader was most knowledgeable about his community. Inevitably, selection of the households for the PA exercises and household surveys by the village leader will have biased the results, especially if he/she were related to participants and respondents or knew them personally, or if there were local politics at play that might have skewed participant responses. However, it was necessary to adopt this approach for household selection, and while the possibility of bias is noted, no unusual results were identified and it can only be assumed that the household sampling was conducted fairly and with impartiality.

The following sections describe the nature of the survey instruments used in each country in more detail, and reasons for their use.

3.8.1 Zambia case study

A combination of participatory tools and conventional questionnaire surveys were employed in Northern and Copperbelt Provinces of Zambia.

Qualitative participatory research was first undertaken in nineteen villages (see Table 3.4) of Northern and Copperbelt Provinces, interspersed with quantitative questionnaire surveys for the collection of uniform baseline data. Approximately 200 people (average of 10-15 people per session disaggregated by gender) attended the PA consultations undertaken by local experts conversant in Bemba and Lamba, the dialects spoken in these provinces.

Table 3.4: Villages sampled for participatory appraisal in Zambia

Province	District	Village/Communities
Northern	Mpika	Ngalande, Chansamilando, Kapoma, Kanseka
	Mungwi	Mukuka Mfumu, Muchaka

	Luwingu	Chinika, Mutemi, Mapanda, Kashete, Mulenga
Copperbelt	Masaiti	Chinondo, Mboyonga
	Mpongwe	Kapitolo, Kaumba, Mulamata, Salona
	Lufwanyama	Mayeba, Lwendo

Villages were selected with assistance from government representatives. First of all recommendations on appropriate settlements for study were made by the District Council Director of Works who is responsible for road maintenance and rehabilitation in each district. Secondly, villages along the chosen feeder roads were selected on the basis of having a minimum of ten households, to ensure that group sessions could be conducted with separate household members. Thirdly, it was necessary for the villages under survey to be physically accessible at the time of the research, which was carried out during the wet season. This required use of a four wheel drive vehicle to ensure that the researchers could access remote off-road villages. Finally, once these key criteria were fulfilled the villages were randomly chosen from a shortlist, after which the village leader from each settlement selected households to be surveyed. For the participatory exercises, separate groups of men and women were mobilised with assistance from the village leader.

The quantitative surveys in Northern Province were implemented in conjunction with the World Bank's Rural Travel and Transport Program (RTTP) funded Socio-Economic Impact Study of Improvements to Feeder Roads in Zambia. Villages were sampled from feeder roads that were due to be rehabilitated in 2001 for both questionnaire and participatory surveys. Table 3.5 indicates the distribution of survey type by gender in each district of the two provinces surveyed. The figures indicate the number of male and female respondents that participated in each exercise.

Table 3.5: Number of participants contributing to research exercises in Zambia

	Province >	Northern Province							
	District >	Mungwi		Kasama		Luwingu		Mpika	
	Gender >	M	F	M	F	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household*	38	19	7	6	14	16	45	9
	Village	6		2		2		7	
	Transport operator	0		17		16		17	
	Travel diary*	-	-	-	-	-	-	-	-
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions	-	-	-	-	-	-	-	-
	SSI's with key informants	2				3		3	1
	Triangulation (methodological)	✓	✓	✓	✓	✓	✓	✓	✓
	Observation	✓	✓	✓	✓	✓	✓	✓	✓
	Mapping	-	-	-	-	-	-	-	-
	Causal impact analysis						14	14	
	Mobility charts	15				24		12	
	Discussion starters								
	Ranking exercises	27	13			37	13	21	31
	Venn diagrams							16	
	Daily activity chart		8					15	
	Transect line	4							
	Seasonal diagram	-	-	-	-	-	-	-	-
	Income/expenditure matrix	-	-	-	-	-	-	-	-
	Timeline					9			

	Province >	Copperbelt Province					
	District >	Masaiti		Mpongwe		Lufwanyama	
	Gender >	M	F	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household*	17	1	14	6	7	6
	Village	2		4		2	
	Transport operator	0		3		1	
	Travel diary*	-	-	-	-	-	-
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions	-	-	-	-	-	-
	SSI's with key informants	2	2	7	1	1	1
	Triangulation (methodological)	✓	✓	✓	✓	✓	✓
	Observation	✓	✓	✓	✓	✓	✓
	Mapping	-	-	-	-	-	-
	Causal impact analysis			8			
	Mobility charts						12
	Discussion starters					7	
	Ranking exercises	25	42	32	24	12	8
	Venn diagrams			7	4		
	Daily activity chart	-	-	-	-	-	-
	Transect line	-	-	-	-	-	-
	Seasonal diagram	-	-	-	-	-	-
	Income/expenditure matrix	-	-	-	-	-	-
	Timeline	-	-	-	-	-	-

Key: M = Male F = Female * Head of household

Note: ✓ denotes which approaches were used during the surveys

Figures denote the absolute number of people surveyed using different approaches

In keeping with the principles of SL Approaches, the research team took steps not to lead participants into talking specifically about their transport problems, but rather to see how transport emerged as a constraint to their daily livelihoods and impacts on the delivery of other (outreach and extension) services. The SLA adopts a multi-sectoral approach, and hence the research purpose (that of investigating transport and mobility) remained anonymous, in order to elicit the genuine needs and constraints of the poor by limiting any potential bias.

The participatory exercises began with a broad overview of the research (*who* was funding it, *why* it was being conducted, and *what* the likely outcomes would be, see Section 3.3). Through use of maps and diagrams (see Figures 3.2 to 3.9), it was possible to generate discussion on livelihood issues of the poor without alluding to transport in particular. In most instances, the natural course of the dialogue led to discussion of personal mobility that features in daily activities, such as water and firewood collection, going to the farmstead and market. It then became natural and 'legitimate' to discuss accessibility to services and transport provision in this context.

3.8.2 Cameroon case study

As in the Zambian case study, a combination of participatory tools and conventional questionnaire surveys were employed in Southwest and Adamaoua Provinces of Cameroon.

Participatory Appraisal exercises were undertaken in eight villages from a total sample of approximately 150 people in Southwest and Adamaoua Provinces of Cameroon (see Table 3.6). In the Southwest Province, Fako and Ndian Divisions inhabited by the Bakweri, Balondo and Bakundu ethnic groups were chosen for sampling, and in Adamaoua the Peulh and Ndourou tribes were surveyed in Vina Division.

Table 3.6: Villages sampled for participatory appraisal in Cameroon

Province	Division	District	Village/Communities
Southwest	Fako	Buea	Bavenga
	Ndian	Ekondo Titi	Njima, Ekondo Nene
Adamaoua	Vina	Mbe	Vourgne Mamboum, Nyadou
		N'gaoundéré	Nkoumbol-Kognoli, Hangloa, Ngaoumbam

Villages were selected on the basis of advice provided by Sub-Division Officers who provide an administrative function for the rural communities under survey. They advised the researcher as to which villages were suitable to survey with respect to their demographic characteristics, level of poverty and access to transport services, as well as distance to local resources and amenities (in a similar way to Zambia, see Section 3.8.1).

After making appointments with the respective village headmen, they mobilised separate groups of men and women for participating in the PA exercises, in order that gendered responses could be obtained to differentiate between men and women's trip-making patterns. Separate PA groups also ensured that both sexes were given sufficient 'voice' without the imposing presence of the other group. In some villages (particularly in Adamaoua Province) women were not allowed to sit among men during group discussions.

The PA exercises were typically undertaken over the course of one or two days in order to capture a diversity of information, and to inform the learning and reflective process which helped respondents to visualise their transport problems and solutions. Table 3.7 indicates the distribution of survey type by gender in each district of the two provinces surveyed.

Prior to the participatory consultations, a checklist of PA tools was devised with the local researchers to ensure that appropriate exercises were carried out, and to assist learning and feedback between the survey team and target communities. It was also important to consider how the communities might consolidate support for improved infrastructure and service provision by identifying strategies villages adopt to manage their livelihood assets in the absence of a formal transport network. Examples of risk management in this context include combining long distance journeys for tasks such as maize grinding and selling maize meal at market, and farmer's co-operatives involved in the group hire of tractors to evacuate produce to market.

Table 3.7: Number of participants contributing to research exercises in Cameroon

	Province >	Southwest Province							
	District >	Buea		Ekondo Titi		Idenau		Muyuka	
	Gender >	M	F	M	F	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household*	38	9	52	6	8	5	61	12
	Village	4		4		1		2	
	Transport operator	0		24		3		7	
	Travel diary*	-	-	-	-	-	-	-	-
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions	-	-	-	-	-	-	-	-
	SSI's with key informants	1	4	1	1				
	Triangulation (methodological)	✓	✓	✓	✓	✓	✓	✓	✓
	Observation	✓	✓	✓	✓	✓	✓	✓	✓
	Mapping	13	9	17	13				
	Causal impact analysis	13	9	10	8				
	Mobility charts	13		10	13				
	Discussion starters			7					
	Ranking exercises	-	-	-	-	-	-	-	-
	Venn diagrams		9	10	13				
	Daily activity chart	13	9	17	13				
	Transect line	3	1	3					
	Seasonal diagram			17	5				
	Income/expenditure matrix	13	9	17	13				
	Timeline	-	-	-	-	-	-	-	-

	Province >	Adamaoua Province			
	District >	Mbe		N'gaoundéré	
	Gender >	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household*	50	0	86	8
	Village	4		5	
	Transport operator	1		10	
	Travel diary*	-	-	-	-
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions				18
	SSI's with key informants	1		4	
	Triangulation (methodological)	✓	✓	✓	✓
	Observation	✓	✓	✓	✓
	Mapping	14	5	52	13
	Causal impact analysis	14	5	52	10
	Mobility charts	14		52	3
	Discussion starters	-	-	-	-
	Ranking exercises	-	-	-	-
	Venn diagrams	14	5	52	13
	Daily activity chart	8			
	Transect line	-	-	-	-
	Seasonal diagram	6		52	13
	Income/expenditure matrix	14	5	52	13
	Timeline	-	-	-	-

Key: M = Male F = Female * Head of household

Note: ✓ denotes which approaches were used during the surveys

Figures denote the absolute number of people surveyed using different approaches

At each stage of the enquiry, a rapporteur and facilitator were employed to lead the participatory exercises. Equipment used in the PA exercises included locally obtained materials, flipchart paper and markers for working in wet conditions.

3.8.3 Kenya case study

The methodological approach for KENDATs *Rural transport services project for Kenya* had already been pre-designated prior to the candidates inputs on the project, and hence the majority of involvement in the fieldwork was done remotely as there were insufficient funds to make direct contributions in the field. However, a questionnaire was drafted to include questions on social trip-making (Appendix A4), along with a travel diary (Appendix A5) and PA checklist for KENDAT to use in conjunction with their own household survey (Appendix A6). A short field visit was made to the three field sites in Kenya. During this time, key informant interviews and focus group discussions were undertaken. However, opportunities for conducting full participatory surveys using visual tools did not present themselves because of funding and time constraints.

Participatory research approaches (semi-structured interviews and focus group discussions) complemented the quantitative data collection by facilitating dialogue on the role of transport in the creation and maintenance of social capital networks, and to enquire why poor and vulnerable people might be excluded from accessing social capital. Table 3.8 indicates the distribution of survey type by gender in each district of the three provinces surveyed.

Alongside the full quantitative survey, a smaller select sample of households was surveyed using a travel diary in order to ascertain the inter-connections between mobility patterns and livelihood pursuits among rural households. Travel diaries were distributed to 53 household members in 12 households, sampled by economic strata and occupation.

Table 3.8: Number of participants contributing to research exercises in Kenya

	Province >	Central				Eastern		Rift Valley	
	Division >	Lari		Mwea		Kalama		Magadi	
	Gender >	M	F	M	F	M	F	M	F
QUANTITATIVE (QUESTIONNAIRE)	Household*	24	50	46	29	25	24	43	5
	Village								
	Transport operator								
	Travel diary*	3		3	1	3	2		
QUALITATIVE (PARTICIPATORY APPROACHES)	Focus group discussions			4		15	6		
	SSI's with key informants	1	2	4		1	3		
	Triangulation (methodological)	✓	✓	✓	✓	✓	✓	✓	✓
	Observation	✓	✓	✓	✓	✓	✓	✓	✓
	Mapping	-	-	-	-	-	-	-	-
	Causal impact analysis	-	-	-	-	-	-	-	-
	Mobility charts	-	-	-	-	-	-	-	-
	Discussion starters	-	-	-	-	-	-	-	-
	Ranking exercises	-	-	-	-	-	-	-	-
	Venn diagrams	-	-	-	-	-	-	-	-
	Daily activity chart	-	-	-	-	-	-	-	-
	Transect line	-	-	-	-	-	-	-	-
	Seasonal diagram	-	-	-	-	-	-	-	-
	Income/expenditure matrix	-	-	-	-	-	-	-	-
	Timeline	-	-	-	-	-	-	-	-

Key: M = Male F = Female * Head of household

Note: ✓ denotes which approaches were used during the surveys

Figures denote the absolute number of people surveyed using different approaches

3.9 Methods of Analysis

The quantitative data was received from local counterparts as spreadsheets in Microsoft Excel and was 'cleaned' by project researchers who checked the quality of data entry against the questionnaire sheets, to validate their accuracy. Subsequent analysis using cross-tabulations was carried out, with graphs and charts produced in Excel and in some cases trend lines generated automatically using the power regression tool. Full statistical analysis (such as standard deviation, correlation coefficient and regression) was not attempted. Rather, general trends and patterns could be identified from the quantitative data (which proved not to be statistically significant), and was then validated by the qualitative data that provided some explanation for the trip-making patterns which emerged. As Ellis (2000) suggested in Section 3.6, a combination of the two approaches

was adopted and allowed for triangulation of results without the need for statistical verification.

For the Zambia and Cameroon case studies, qualitative data was systematically reviewed by the candidate, and the notes taken during the participatory exercises were transferred to a series of Excel spreadsheets under the following themes:

- Healthcare
- Education
- Agricultural marketing
- Domestic activities
- Transport.

For each village surveyed, discussion about trip frequency, distance and cost pertaining to these themes was recorded and disaggregated where possible by gender, along with comments and verbatim remarks (please refer to Appendix B for a sample of the worksheets produced for the Zambia and Cameroon data). Once data entry had been completed, the spreadsheets were printed and displayed and together with the graphs generated from the quantitative data, the case studies were planned and developed, highlighting specific issues that could be corroborated by both participatory appraisal and questionnaire data.

Livelihoods analysis was attempted using the Zambia case study (see Section 4.6.1) in a simplified manner through subjective application of the qualitative data onto the livelihoods asset pentagon. The logical progression for the research and interpretation of the case study results was to attempt quantification of livelihood indicators in the Cameroon case study.

A more sophisticated approach to livelihoods analysis was adopted for the Cameroon data, leading to the quantification of selected livelihood indicators derived from the questionnaire data and subsequent design of the Sustainable Livelihoods Indicator Model (see Section 5.6.1 and Chapter 6). Hence, the SLIM model is itself is a stand alone result and outcome of the Cameroon case study developed before the Kenya case study was conceived and is presented as an independent Chapter between the Cameroon and Kenya case studies.

3.10 Lessons for the Future

Participatory methods are not without their weaknesses. However, the advantage of applying participatory techniques to facilitate a two way process of learning and reflection is that, when properly applied, they are better able to engage with stakeholders than conventional survey methods and tend to be less extractive. Conventional surveys are at risk of being conducted under strict time schedules with a rigorous means of sampling households using a prescribed questionnaire (Ellis, 2000; Scheyvens and Storey, 2003). Participatory methods can be applied at any level of learning and the visual tools can be designed for participants who are unable to read and write (see Discussion Starters in Figure 3.4).

However, some minor problems were experienced in the field during participatory surveys for this research, broadly categorised into the following:

- Although the researchers took deliberate steps not to lead the discussion by communities and so bias their responses, it was observed that the respondents had certain levels of expectation and occasionally imparted information they thought the researchers wanted to hear. Despite being told that the research would not result in actual intervention in the village, some participants would seem to elaborate their individual problems, perhaps with the anticipation that development assistance would follow.
- It often took some time for participants to understand the concept of a particular PA tool, which resulted in delays while the exercise was explained sufficiently for all participants – this was especially the case for venn diagrams and ranking exercises.
- While every effort was made to use the natural environment for visual techniques, the weather often caused the abandonment of use of the ground for visual exercises, hence confining participants to the use of paper and marker pens.
- In some cases a member(s) of the community would tend to dominate discussions (e.g. Headman or Councillor), with just two facilitators it was sometimes difficult to manage these individuals and to ensure free-flowing discussion.
- The active age of the group affected attitudes and travel behaviour. The groups were disaggregated by gender but not age, for reasons given in Section 3.8. The mixed age of the groups was interesting in that there was variation in personal mobility between older participants and youths. However, the age variation was also evident

in the perceptions and priorities of the respondents, which made it difficult to elicit consensus for some PA exercises when required.

- Some of the groups were too large (over 15 to 20 people) for effective group management and resulted in discussions without visualisation. This would usually occur if the PA exercises were undertaken outside or in a public place that enabled additional villagers to take part. Most of these villagers would sit and observe, but sometimes they would join in the discussion, which made it more difficult to manage and facilitate, and for the group to view the visual tool being used.

The data acquired from each case study are robust enough to answer the research questions outlined in the Introduction (Chapter 1) with sufficient (but not statistical) confidence. During the field studies, all efforts were taken to limit survey biases, such as disaggregation of data by gender. The list provided above also highlights the origins of some biases and their implications for the research.

The methodological approach to conducting surveys in Kenya differed from the approach adopted in Zambia and Cameroon and hence the dataset is not directly comparable. The investigation undertaken in Zambia and Cameroon explored specific facets of SL Approaches in the context of transport, mobility and accessibility among the rural poor. In contrast, Kenya focused specifically on social capital in the context of transport, mobility and accessibility.

The research objectives have evolved since the Zambia and Cameroon case studies were undertaken in 2000, with increased emphasis on the vulnerability context and livelihood strategies employed by the poor to manage risk and overcome adversity. Hence, the research has continued with the intention of providing a better understanding of social trip-making, and associated mobility characteristics that facilitate movement with the objective of social capital growth. The Kenya dataset from 2002 indicates the changing methodological requirements of these research objectives and this is reflected in the analysis of case study findings.

Some of the problems associated with participation, featured earlier in this section, demonstrate that PA is not a methodological panacea. Participatory approaches can be as extractive as conventional transport analysis, and so development practitioners are forced to question PA as a methodology. Arguably, participatory techniques are most effectively employed alongside conventional quantitative surveys, which will glean data

that can be measured with some accuracy, and then corroborated by consultations with community members using participatory exercises.

Neither questionnaire surveys, nor participatory techniques are mutually exclusive. Indeed, in their Sustainable Livelihoods Guidance Sheets, DFID (2001b) emphasises that livelihoods analysis makes use of both qualitative and quantitative research, and that participatory research can produce quantitative estimates through aggregating qualitative information. Each method has its strengths and weaknesses, and as this research will demonstrate, effective livelihoods work needs a combination of qualitative and quantitative research methods to reduce and understand biases, misinterpretation of results and incorrect responses, and above all to optimise triangulation for validation of the data collected.

Findings from the case study countries are reported in Chapters 4, 5 and 7, beginning with Zambia.

CHAPTER 4: ZAMBIA CASE STUDY FINDINGS

Research on which this Chapter is based was carried out between January and March 2000. It was presented at the Eighth Regional Seminar for Labour Based Practitioners, 15-19 October 2000, Cairo, Egypt, and subsequently published in the seminar proceedings (Davis, 2000).

4.1 Introduction

It is now widely accepted that travel and transport constraints cannot be solved by roads alone (Dawson and Barwell, 1993). Transport constraints on rural livelihoods are not simply a result of poor road condition. Rather they are a culmination of inadequate infrastructure, poor public transport provision and exorbitant tariffs imposed by private transporters, as demonstrated in the Review of Literature (Chapter 2).

In addition, the poor state of the roads, combined with inadequate transport services, can have an adverse impact on access to rural health centres and primary schools (please refer to 2.3.2 and 2.3.3, Chapter 2). Likewise, the potential for income generation through agricultural production can be hindered due to time and energy requirements for undertaking subsistence activities. Domestic activities such as water and firewood collection, and transporting maize to the grinding mill often incur multiple trips over long distances, and can limit the daily productive capacity of a household (please refer to Section 2.3).

Many poor farmers are also unable to transport their agricultural outputs for sale at market without an intermediate mode of transport, such as a bicycle, or animal cart. Consequently, as this case study will demonstrate, farmers compensate by selling produce at a reduced price to traders or through barter of material goods (e.g. clothes, cooking utensils, firewood or charcoal etc) (see Section 4.5). Alternatively, farmers can pay to evacuate produce to market using private transport services (where available), or through collective hire of a vehicle or ox-cart, and this is also evident from the Zambia case study (see Section 4.3.1).

This case study reviews the interactions of transport on livelihood assets in the Zambian context, and the way in which transport based livelihood strategies can reduce people's vulnerability and improve livelihood outcomes.

4.2 Background

Zambia is a landlocked country covering 752,614 km^2 of land and water in Southern Africa, and has a population of over 10 million.[21] According to the 2000 Census of population and housing, 65% of people live in rural areas (Central Statistical Office, 2003). Agriculture accounts for 85% of the economically active population, yet the agricultural sector only contributes 15% of Zambia's GDP (CIA World Factbook, 2004a). Zambia is a heavily indebted poor country (HIPC), with a total external debt of over $5.2 billion in 2003 (CIA World Factbook, 2004a).

Zambia's copper mining sector accounts for over 80% of the country's foreign currency intake (Samabi, 2000). The country's economy experienced a boom following independence in 1964 when copper production was at 700,000 tonnes per annum. However, the nationalisation of the copper industry, and creation of the Zambia Consolidated Copper Mines (ZCCM) at independence, led to the deterioration of foreign exchange reserves and devaluation of the Kwacha (Samabi, 2000).

The arrival of President Chiluba and the Movement for Multi-Party Democracy (MMD) Government in 1991 promised to reverse the collapse of the Zambian economy which had been exacerbated by the fall in copper prices during the 1970s, leading to a decline in production to 300,000 tonnes per annum (Cunningham, 1999). Yet, even the vigorous promotion of the private sector could not remove the burden of debt, and Zambia's persistent dependence on the copper industry further amplified the severity of the situation. However, privatisation of the ZCCM between 1996 and 1999 set to turn around the economy of Zambia by allowing foreign investors, such as Anglo-America Corporation, to promote capital investment in the country (Bigsten and Kayizzi-Mugerwa, 2000).

Nevertheless, the drive towards a market economy has not been without its pitfalls. In an attempt to reduce public expenditure social services have been provided at a cost to

[21] The CIA World Factbook (2004a) for Zambia records a total population of 10,462,436.

service users since the implementation of the privatisation reform programme in 1994.[22] Consequently, the ability of the rural poor to generate an adequate income that would remove their subsistence burden has been severely hampered, as any available surplus capital is spent on accessing basic education[23] and health care.[24]

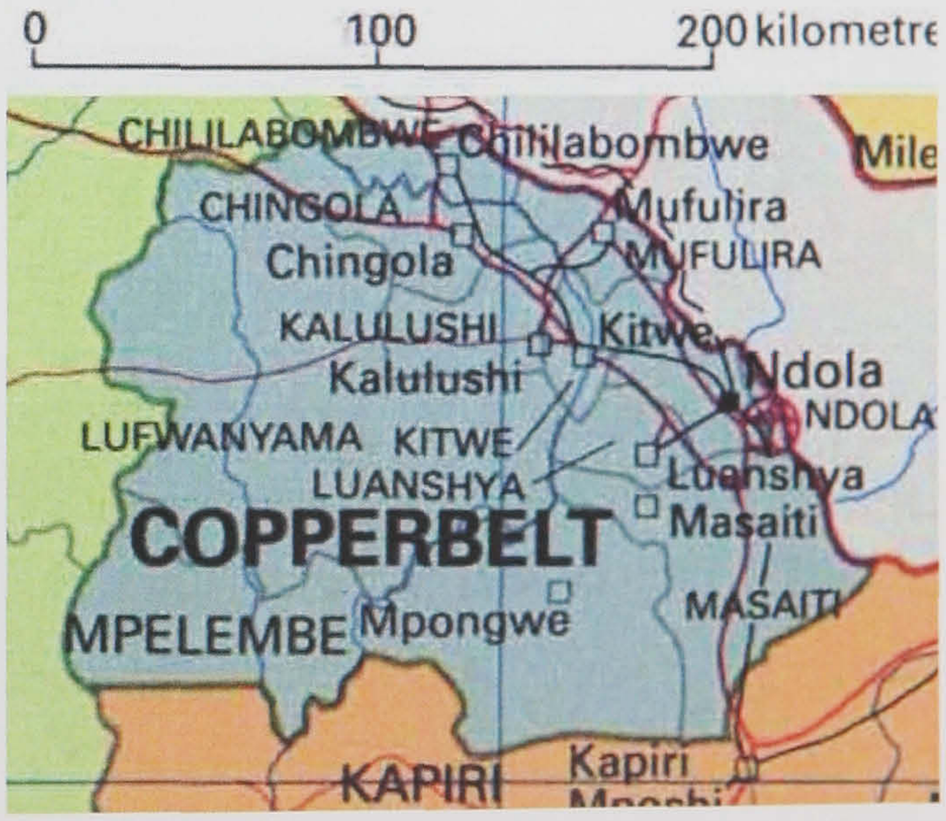
Figure 4.1: Map of Northern Province

Source: Macmillan Zambia (1997)

In contrast, the Copperbelt Province (31,328km^2), so called because of its copper mining activities, is the focus for Zambia's economy and foreign exchange earnings. It has a population nearly double that of Northern Province, 17% of which live in rural areas (Central Statistical Office, 1998). The Copperbelt is located 321km from Lusaka along key trunk road networks and railway lines.

Northern Province (the largest Province at 147,826km^2) is one such region of Zambia where 86% (1,027,000) of the provincial population live in rural areas (Central Statistical Office, 1998). The principle economic activity in Northern Province is the farming of maize, millet, beans, cassava, and sweet potatoes, as well as fishing in districts adjacent to the Lakes of Bangweulu, Mweru-Wantipa and Tanganyika.

Figure 4.2: Map of Copperbelt Province



Source: Macmillan Zambia (1997)

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[22] Personal communication with Chris Mwikisa, Economics Department, University of Zambia, February 2000.

[23] The Basic Education Sub-sector Investment Programme (BESSIP) was introduced by the Ministry of Education in 1998, declaring free primary education. However, while schools have been ordered not to charge primary school fees, some schools have asked for payment under a different 'label' because government funds are not forthcoming, or are inadequate (Kasonde-Ng'andu, 2003).

[24] Access costs include distance to health facilities, waiting time at the facility, monetary and time costs (Hjortsberg and Mwikisa, 2002).

Section 4.3 provides a synopsis of Zambia's road transport network, with a breakdown of Ministerial responsibility and objectives of the transport sector policy.

4.3 Travel and Transport in Rural Zambia

The road transport network in Zambia is extensive, covering 67,000 km, of which only 6,476km is paved, 8,478km is gravel, and 21,967km is earth, with the remaining 30,000 km unclassified (GoZ, 2002a).

Ministerial responsibility for roads is scattered across departments, including Communications and Transport, Works and Supply, and Local Government and Housing, with planning and execution of rural road works being nominally the responsibility of district councils.

The National Roads Board was established in 1994 to administer the Road Fund (National Roads Board, 2004). The Road Fund is used to fund road maintenance, using a fuel levy on petrol and diesel. Money from the fund is then distributed to Provincial Road Engineers through the Roads Department, to carry out maintenance on main, trunk and district roads. The Road Sector Investment Programme (ROADSIP), launched in 1997, aims to bring the core road network into maintainable condition, improve the condition of 'poor' roads, create 30,000 jobs and reduce road traffic accidents by 20%, by 2007 (National Roads Board, 2004).

As part of the government's overall programme, a transport sector policy has been developed (GoZ, 2002b). There is need for an efficient transport system to stimulate production and development (by linking production to demand), employment generation and income creation. The policy demonstrates that government is now committed to (GoZ, 2002b):

- Provide adequate, financially and economically sustainable road transport infrastructure able to facilitate domestic, regional and international trade
- Improve access to jobs as a means of poverty reduction, through increased economic activity in the road transport industry
- Ensure the provision of a safe, efficient, integrated and environmentally friendly road transport system that meets the needs of road users and supports regional road transport strategies

- Ensure that gender equity and the special needs of disadvantaged persons in society are taken into consideration.

The next sections review mobility patterns and rural transport service provision from the primary research undertaken in Northern and Copperbelt Provinces.

4.3.1 Mobility patterns of the rural poor in northern province

Transport operations are now entirely in private hands. The main transport parastatal, United Bus Company of Zambia (UBZ), was liquidated during Zambia's privatisation programme of the mid-1990s (World Bank, 1996b). UBZ is said to have provided a comprehensive rural service which incorporated remote areas. It has not been replaced by the private sector in this role.

Household transport movement, and in particular the personal mobility of the poor is a good indicator of prosperity (see Section 8.4, Chapter 8), because mobility signifies the ability to strengthen an individual's capital asset base with the generation of income, improvement of health and education, and ability to contribute to the economy. Through the application of PA techniques and questionnaire surveys (See Figures 3.2 to 3.9 and Appendix A)[25] mobility patterns were established both within and external to the village.

Mobility charts were used extensively in the application of PA in Northern Province. Following initial discussions, participants were encouraged to indicate visually their travel destinations, the number of people involved in different activities, and the frequency with which activities take place. These schematic representations proved useful in obtaining consistent responses within groups, and as a means of triangulation; they also fostered further discussion of mobility constraints and modal choice (see Figure 3.7 in Chapter 3 for an example of a mobility chart).

The men from Kapoma village in Mpika District, who participated in group exercises, were thorough in their record of trip-making. Using a mobility chart the men's group reported that the forest and Rural Health Centre (RHC) were visited on a daily basis; the

[25] The household and transport operator questionnaires presented in Appendix A2 and A3 are from the Cameroon case study. The same questionnaires (amended to reflect local currency) were used in the Zambia case study.

river, funeral house, beer house, district town (Mpika) and church on a weekly basis; and towns outside Mpika District and the Chief's palace on a monthly basis. Relatives in major towns were said to be visited on an annual basis only. In Kapoma, as in Muchaka and Mapanda villages, men and women travel several times a day to draw water for domestic use, and for land cultivation as well as to collect 'relish' to cook with.

Due to high levels of morbidity and risk of infant mortality in rural areas, it is not uncommon for at least one villager to visit the RHC every day. This is true of Kapoma village, located 3km from the RHC. However, the mobility chart carried out in Muchaka revealed that the distance to the RHC at Malole (28km) restricted the number of journeys undertaken, and that "a person might only manage to go once in a month." Consequently, the mobility constraints of people surveyed in Mungwi District have the potential to significantly impact on their livelihood outcomes, especially if inaccessibility leads to increased morbidity and mortality rates.

Figure 4.3: Trip frequency in relation to distance and destination in Northern Province, Zambia (2000)

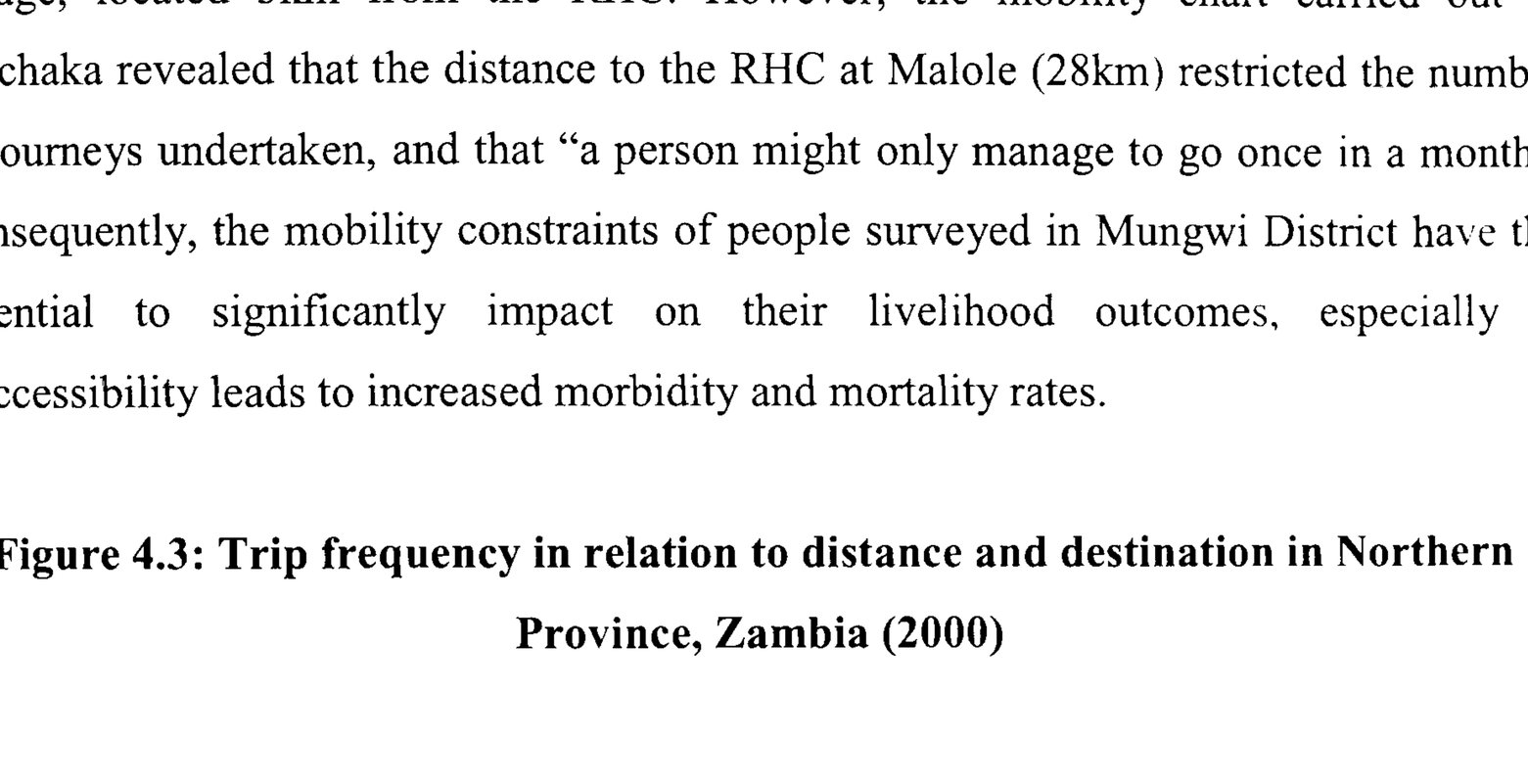

Figure 4.3 generated from the household surveys, indicates a weak inverse relationship between distance and frequency of trips made by respondents from Northern Province. Trip frequency is shown to reduce with increased distance, and the most frequent journeys were those made to farms and primary schools located within the village. In

addition, PA respondents indicated that travel to the RHC was also regular and often daily for women.

Mobility charts generated from group discussion in Kapoma, Mapanda and Mayeba indicated that weekly activities tended to be those that incorporate social interaction, including church (of which several denominations are represented in each village), funerals and beer parties. These activities usually took place within the confines of the village or community and therefore did not require external travel.

Monthly travel tended to be most time consuming and costly, especially trips to large urban centres including Lusaka and towns in the Copperbelt where marketing was much more profitable, and consumer goods affordable. Many of the PA participants spoke of their desire to trade at these markets, yet the majority could only afford to travel to visit sick relations or for funerals.

The principle mode of village level travel was consistently shown to be walking and headloading (see Plate C1, Appendix C) followed closely by cycling, depending on the availability of bicycles in the village. Group discussions indicated that travel outside the village was mostly undertaken by walking to the nearest road junction and getting a lift with a passing vehicle or private transporter. Sixty percent of households surveyed in Kapoma village travelled by foot to the main road and then by vehicle to reach outside the village.

Through observation and discussion it became apparent that bicycles were common in many rural households. In the main, the bicycles were used by men who claimed they were able to transport greater loads (see Plate C2, Appendix C), and tend to have priority use of bicycles over women. Few villages surveyed had no bicycles at all, yet the majority of those owned by 'middle income'[26] households were in a state of disrepair, with no means to pay for spare parts and maintenance. There were reported to be 65 bicycles in Kanseka village, and yet local travel was found to be a greater problem than long distance journeys because of the village location, 7km from local amenities and the feeder road.

[26] 'Low', 'middle' and 'high' income households within the field study sites were categorised by villagers using wealth ranking exercises. All survey participants were considered 'poor' because their income did not exceed 1 US Dollar a day.

Group discussion following use of 'discussion starters' (see Figure 3.4, Chapter 3) in Lwendo, Lufwanyama District, revealed that there were few ox-carts available to farmers because of corridor disease (a bovine disease of the central nervous system), which has killed large numbers of cattle. The use of ox-carts was also found to be uncommon in Northern Province where Bemba and other ethnic groups do not traditionally rear cattle.

However, in Chifulo village, adjacent to Mukuka Mfumu in Mungwi District, healthy oxen were hired out to farmers groups from surrounding villages for transporting goods to and from market, collection of fertiliser inputs, and for ploughing fields (see Plate C3, Appendix C). Hiring an ox-cart in Chifulo cost K20,000,[27] and was only financially accessible to farmers groups, as the cost was prohibitive for individual households. In Mukuka Mfumu, the ox-cart was considered the most time consuming mode of transport, taking 8 hours to reach the RHC, 30km away. It was however, considered to be the most versatile IMT, despite the oxen being cumbersome, slow and prone to risk of disease.

The response from the surveys and mobility charts was as expected, in as much as the movement of the poor was related to their livelihood requirements and ability to travel beyond the village. Therefore, short local trips were found to be more necessary and frequent, such as those to collect water and firewood, to cultivate land, and for children to attend primary school. Longer distance trips outside the village, including those to the RHC, secondary school, markets, informal or formal employment, and for social visits, were less frequent. They tended to require motorised transport for at least part of the journey, which was beyond the financial means of many households.

Where motorised transport was not available, villagers required sufficient time to travel using IMTs or on foot. The physical condition of access routes also affected the frequency and distance travelled by villagers, especially during the wet season when a greater proportion travelled on foot because of recurrent impassability by motorised and non-motorised traffic.[28] The availability and affordability of motorised transport services is discussed in more detail in the following section.

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[27] The exchange rate at the time of research was 2,745 Kwacha to 1 US Dollar.

[28] The wet season in Zambia is between November and April each year. The rains can contribute to the degradation of unsealed roads by washing away the earth or gravel surface. Vehicles are also more likely to create potholes and gullies during the wet season because the road surface is weakened from continuous rains, thus sometimes rendering them impassable by vehicles and IMTs.

4.3.2 Rural transport services

A timeline drawn by a group of nine men representing different generations from Kashete and Mulenga villages, revealed changes in pattern of travel means since 1945 (see Figure 3.6, Chapter 3). During the 1950s and 1960s, people started to own bicycles, as purchasing power increased, and vehicular transport services emerged on major routes. As improvements in agricultural production increased with the provision of subsidised inputs, so did bicycle ownership at the village level throughout the 1970s and early 1980s. Likewise, vehicle access to villages improved with, for example, the Northern Co-operative Union (NCU) travelling to despatch fertilisers. By 1984 these trucks ceased travelling to the area, due to a combination of impassable roads and the liberalisation of agricultural marketing.

Adjustment reforms in Zambia impacted heavily on agricultural productivity, and consequently on the ability of the poor to purchase their own means of transport, including bicycles, and to pay for transporter charges. This downswing in transport trends caused people to only travel outside the confines of the village, and for long distances when absolutely necessary. The collapse of UBZ in the 1990s, combined with exploitative transport cartels seriously impacted on trip frequency because of exorbitant fares imposed.

Figure 4.4: Trip duration by purpose in Northern Province, Zambia (2000)

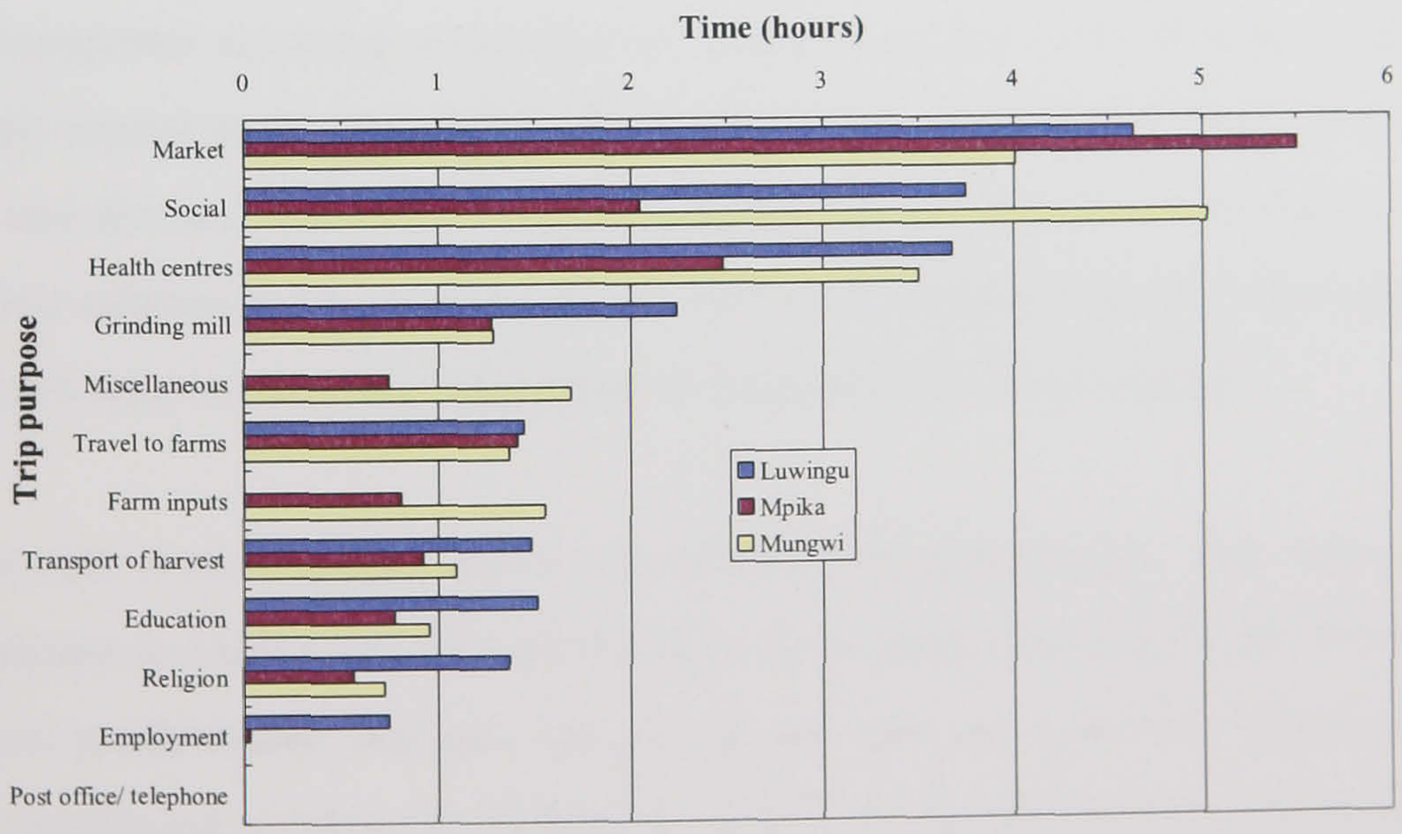


Figure 4.4 shows increasing trip time for activities outside the village, with households prepared to travel further and longer for essential trips, especially to the market. Social visits were also shown to be particularly important to households in Mungwi District as

they were willing to travel for over five hours (and more than 100km) to visit friends and relatives. Shorter trips which are less time consuming tended to be undertaken more frequently such as trips to farms and primary schools as shown in Figure 4.3.

Figure 4.4 indicates that the duration of trips varied widely between districts for some destinations. Trips to health centres are a case in point. The RHC was located 30km and 28km away from villages surveyed in Luwingu and Mungwi Districts respectively, accounting for an average trip duration of over 3.5 hours. In contrast, the distance between villages and the community RHC at Chalabesa for example ranged from 1-7km, hence average trip duration fell to 2.5 hours in Mpika District.

Long distance journeys to large commercial centres in Northern Province were shown to be more cost effective than shorter trips to localised markets. Where regular services run on an efficient transport network, competition is generated between operators to maintain affordable fares. In remote areas fares remained high to account for fuel consumption and maintenance requirements of the vehicles, as explained in Section 2.7.2, Chapter 2.

Indeed, the household data infers that the further the distance travelled, the more cost effective the journey became. In Mungwi District for example, the cost of hiring a bicycle for the 30km journey from Mukuku Mfumu to Malole was K3,000, and a lift from Malole to Kasama typically cost K5,000 over 50km. Whereas a journey with a private transporter covering a distance of 210km cost K17,500. However, journeys of this length tended to be undertaken by people working in formal employment such as teachers and doctors who were required to travel to the district or provincial capital to collect their salaries every month. For teachers at Kenyenda school in Mpongwe, it cost K4,000 each way to travel by transporter to Luanshya for their salaries.

Transport cost is not the only travel consideration of poor people. The value of time is also important to most rural farmers because time spent absent from the fields impacts heavily on productivity. Indeed, the saving of time over money appeared to be a common livelihood strategy in Northern Province, because the time taken to travel to the main road and wait sometimes days to get a lift with a transporter could offset any profit made on the sale of harvest. Group respondents were repeatedly found to favour selling or exchanging their agricultural produce at the village level than transporting their crops to market. Crop marketing is costly in terms of high transport fares, and time

lost in travel, which could otherwise have been spent improving agricultural yield. This might explain why bartering was found to be widely practised in Northern Province.

Transport services in Zambia are driven largely by a density of demand i.e. the size of the market for transport services (Ellis and Hine, 1998). Private transport operators are rarely prepared to travel along decrepit feeder roads for distances of up to 100km in order to satisfy the transport requirements of scattered populations, especially at an affordable price. There is not sufficient demand to warrant the provision of a frequent and cost effective service. The cost of fuel, regular maintenance and repair, and time taken to transport a vehicle into remote areas with a handful of passengers is uneconomical for transport operators, and this is evidenced by the inflated cost of short distance trips shown in Figure 4.5. Private transporters can achieve greater income earning potential stationed at an urban or peri-urban centre.

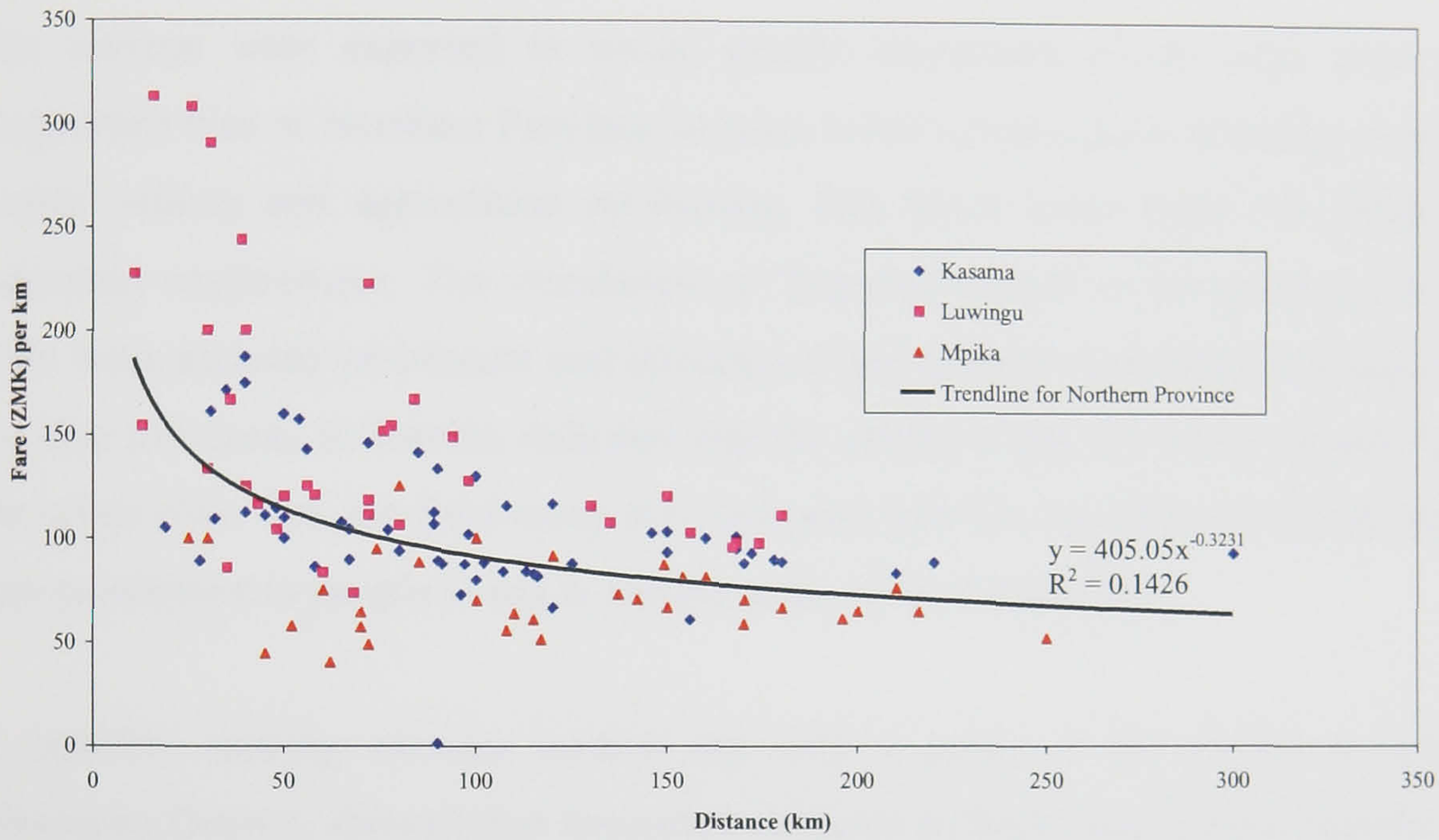
Indeed, all of the transporters surveyed were found in district centres or in towns on main roads, and few actually travelled to any of the villages in which in-depth surveys were undertaken. In addition, transport parks in Luwingu were found to have numbers of vehicles waiting to be fully loaded before moving off so as to maximise load capacity (Plate C4, Appendix C). Indeed the transport operator surveys indicated that load times ranged from two hours to four days. The average load time of transporters sampled was 20 hours in Kasama, 17 hours in Luwingu and 8 hours in Mpika. The majority of these transporters operated from the district centres, but undertook journeys to less populated towns. Where there was reduced demand for the service, a longer load time could be expected to maximise viability of the service.

Figure 4.5 extracted from the transporter questionnaire data, corroborates findings from the household questionnaire, showing transport fare declining with distance. This can be explained by a greater demand for inter-urban transport services that run between major towns. Shorter distance journeys, for example those which involve travel on feeder roads, were more costly per kilometre travelled. This is partly because the vehicle may not have been carrying its maximum load capacity, and may have incurred damage from the road, as well as higher fuel costs because of frequent gear changes.

When interviewed, the transport operators were asked to give details of fares and distances on specific routes travelled, including the type of road (trunk, main, primary, secondary and tertiary), but did not specify whether the roads serviced were paved or

unpaved. The vehicle operating costs on unpaved feeder roads are higher than on paved roads because of fuel consumption and prolonged damage to the vehicle, and these costs are transferred to the service user, hence it is likely that short distance trips would have been made on unpaved feeder roads surrounding the villages, thus incurring higher charges.

Figure 4.5: Relationship between average passenger fare per km and distance in Northern Province, Zambia (2000) - Transporter data



Causal impact analysis was undertaken in Ngalande (see Figure 3.8, Chapter 3), Chinika and Mutemi villages, where the causes and effects of the poor road were indicated on a flow diagram following discussion of community concerns. The causal impact analysis exercise enabled villages to identify relationships between perceived causes of the poor state of the road and subsequent impacts (indicated by the arrow direction). The group of 14 men that undertook causal impact analysis in Ngalande explained that causes of inadequate road provision were the responsibility of the government. They complained of poor mobility and reduced travel that affected their ability to earn a living through sale of produce, which impacted on their food security and health thus contributing to their continued underdevelopment.

The empirical evidence suggests that feeder roads in rural Zambia are integral to accessibility, particularly with regard to service provision and adoption of risk minimising strategies to maximise livelihood potential (see Table 4.1). In participatory exercises that elicited priority ranking of major concerns, the road nearly always emerged as one of the top three concerns in Northern Province (in 8 out of 10 ranking

exercises). Arguably, since the liquidation of UBZ and demise of NCU, there has been insufficient public investment in rural roads, and the issues related to cost and frequency of private transport have already been described earlier in this section.

This discussion of rural mobility and transport services continues now with the Copperbelt.

4.3.3 Mobility patterns of the rural poor in copperbelt province

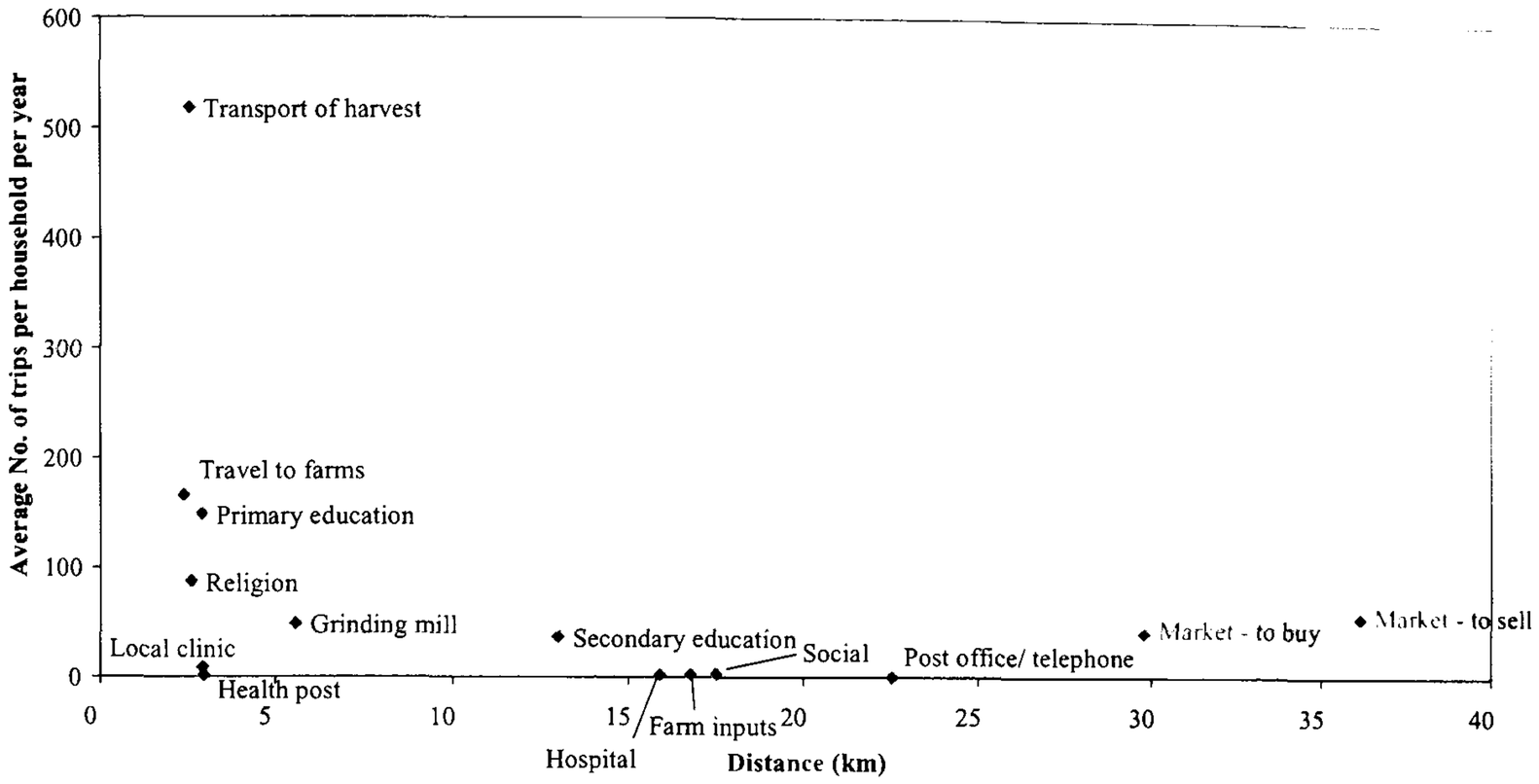
The surveys were expected to reveal greater movement of the rural poor in the Copperbelt than in Northern Province because it has a more active economy in terms of copper mining and agricultural production, and hence more scope for formal (and informal) employment. The circulation of financial capital in the province resulting from trans-national investment and injection of government and donor funding relative to other provinces in Zambia indicates that the ability to pay for travel extends beyond the urban elite. Yet, the field study data indicates that the cost of travel and transport is also prohibitive to people living in remote areas of the Copperbelt.

A mobility ranking exercise carried out with a group of 20 women in Kapitolo, Mpongwe District, showed that frequency of travel to fetch water ranked highest of the ten trip destinations selected by the group along with trips to farms, followed closely by trips to market. The frequency of travel for social purposes was ranked much lower, especially for women's club meetings (ranked 4th), weddings (ranked 7th) and funeral ceremonies (ranked 5th). Reasons provided for different rankings indicated that trip frequency is correlated with distance of trip purpose and also access to IMTs.

The mobility analysis exercise undertaken in Mayeba village, Lufwanyama, indicated a similar frequency of travel to water sources, fields and the RHC as in Northern Province. Indeed most activities were undertaken with the same regularity, for example water was drawn from the well three or four times a day by women, and men and women visited the fields once or twice a day for cultivation and collection of food for consumption. Visits to the health centre were also frequent because of the prevalence of malaria. These and other journeys made within the community were carried out on foot, and only external trips, for example to market at Kitwe (60km), required a motorised transport service. As Figure 4.6 indicates, the number of trips to the market and services such as hospital and secondary school became more infrequent with distance, while

local trip-making to the RHC, primary school, church and farms were undertaken more frequently and at less distance.

Figure 4.6: Trip frequency in relation to distance and destination in Copperbelt Province, Zambia (2000)



Discussions with participants in Mulamata, Mpongwe District was very revealing. The road linking the district centres of Mpongwe and Luanshya was sealed in the late 1990s and has been the catalyst for positive and negative impacts for inhabitants of Mulamata that is situated on a feeder road parallel to the tarmac road. Allegedly, villagers had to wait up to twelve hours for a transport service before the road rehabilitation, after which they were able to get a lift within thirty minutes, hence facilitating crop marketing and increased availability of consumer goods.

However, many villagers were fearful of ambush along their feeder road because of a perceived rise in crime caused by increased rural-urban interactions and traffic flow that the main road facilitated. In discussions, women complained that "there are new faces at the roadside" who trade in sex, and that the road itself caused a higher risk of road traffic accidents among villagers who have received no training in road safety. Consequently, the travel patterns of local people have altered, with women claiming that they would only travel outside the village in daylight hours, in groups and at less regular intervals.

Animal traction was once prevalent in the Copperbelt where there was the capacity and commitment to manage animals, however corridor disease has destroyed many cattle

stocks. An exercise was used with a group of seven men in Lwendo village, Lufwanyama to establish the advantages and disadvantages of various IMTs using photographs as 'discussion starters'. The transport means were ranked according to frequency of use and draught animal traction emerged as the preferred transport option because it has a large carrying capacity, can be used for transport and for ploughing fields and requires low maintenance.

The availability and affordability of motorised transport services are discussed in more detail in the following section.

4.3.4 Rural transport services

Motorised transport for trip-making external to the village was preferential to participants of the PA exercises in the Copperbelt because of the speed at which journeys could be accomplished and time savings made in marketing transactions. Yet, despite an improvement in feeder road condition in the province (for instance the upgrading of the Mpongwe to Luanshya road from gravel to tarmac), and subsequent availability of motorised transport services, transport services remained financially inaccessible to poor households. For example a one way trip from Kanyenda to Luanshya in Mpongwe District covering 29km, was reported to cost K4,000.

Condition of the feeder and main roads in Lufwanyama was particularly desperate at the time of the field study in 2000. Some villagers took it upon themselves to restore tertiary feeder roads leading to their particular village. Lwendo was a case in point where crude materials and construction methods (logs and branches overlaid across potholes in the earth road) were used to reconstruct the road allowing vehicles to pass along it (see Plate C4, Appendix C).

The problem of feeder road condition is pervasive throughout Northern and Copperbelt Provinces, yet it would appear that the Copperbelt has benefited considerably from external funding (for example the European Development funded Small-holder Development Programme between 1988 and 1995), enabling much needed road rehabilitation to be carried out. Nevertheless, it would appear from the case study and supporting literature that remote rural areas bereft of significant agricultural productivity in both provinces have been marginalised by conventional prioritisation

procedures that adopt cost benefit analysis as a means of appraisal (see Section 2.2.1, Chapter 2).[29]

A summary of livelihood constraints experienced by the rural poor is given in Section 4.4.

4.4 Livelihood Constraints

The PA exercises used in Northern Province indicated that food security was a key livelihood constraint faced by rural communities "the food insecurity that grips most homes in our area can be blamed on these people that trade on barter terms" (male respondent from Mulamata). A number of factors exacerbated food security including the cost and access constraints associated with obtaining fertilisers. In villages sampled from Mpika District (Ngalande, Chansamilando, Kapoma and Kanseka) participants described how many households had resorted to a 'chitemene' or 'slash and burn' farming system since the government stopped providing fertiliser on credit through the Credit Union and Savings Association (CUSA) in the 1990s.

Appointed fertiliser agents had to travel 103km from the district centre in Mpika and were unable to assist farmers in the area, as they have no vehicle to make the two hour trip, 32km along the poor access road.[30]

Basic access to markets emerged as the principal livelihood constraint cited by rural communities in the Copperbelt. Participatory discussions revealed that Mpongwe and Masaiti Districts were better able to obtain farm inputs required for surplus production of maize by forming farmer's co-operatives with which to secure collateral for the acquisition of fertiliser. These districts also benefited from donor funded rural development programmes that have boosted the institutional capacity of the District Councils, enabling them to initiate localised feeder road improvements with graders borrowed from the Provincial Roads Engineer. The Small-holder Development Programme (SDP) is one such project which funded the rehabilitation of six roads in Mpongwe District and two roads in Masaiti District.

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[29] Personal communication with Rod Stevens, Ministry of Local Housing and Government, February 2000.

[30] Personal communication with James Malama, District Agricultural Co-ordinator, Mpika District, February 2000.

The less fertile district of Lufwanyama, Copperbelt, received no EU funding from the SDP and was arguably the poorest and most inaccessible district in the province. The Lufwanyama District Council had no equipment to undertake essential road maintenance and the only money received from central government was for fuel for a broken grader.[31] Trips from Mukutuma to Kitwe (60km) undertaken by local teachers and farmers usually involved a three hour walk to the nearest junction, followed by a K4,000 single fare to Kitwe.

Transport problems in Lufwanyama District were shown to be more characteristic of those experienced in Northern Province, especially the problem of food security. This was particularly so during shocks and stresses, as in 1999 when heavy rains led to a poor harvest. During this period, children were taken out of school to carry out piecework in exchange for the staple 'mealie meal'. In addition, PA participants described the soils in Lufwanyama as poor, and in the absence of farmer's co-operatives for the acquisition of fertiliser, villagers tended to move further into the bush. This localised migration diminishes the availability and quality of natural resources for households, as well as human capital, especially when children are taken out of school to assist with farming, and because shifting cultivation associated with chitemene can incur increased distance to school facilities.

4.5 Livelihood Strategies

The field study revealed that the rural poor in both Northern and Copperbelt Provinces have very little scope to adopt transport based strategies to markedly improve their livelihood potential. There is demand for transport interventions to facilitate marketing activities and for access to basic services, be they moderately priced transport services, or non-motorised intermediate modes.

At the time of the study in 2000, the only transport providers who directly impacted on rural livelihoods were informal transporters and rural householders who owned ox-carts and (more commonly) bicycles. Opportunities for 'catching lifts' to the market were highlighted by PA respondents in the Copperbelt, particularly in Ibenga, a town bordering Masaiti and Mpongwe Districts where a combination of pickup trucks,

[31] Personal communication with Wilson Musefwe, Senior Administrative Officer Lufwanyama District Council, March 2000.

tractor-trailers and scotch carts provided frequent services to outlying areas. A small-scale farmer in Ibenga was found to own an ox-cart and seven cattle, hired out for K500 per kilometre or K500 per 50kg box of vegetables. He generated additional income by hiring out his oxen for ploughing, at K100,000 per hectare of land.

In the remote villages themselves, it was not uncommon to find people leasing out their bicycles for a fee (for example K5,000 in Kanseka, Kapoma, Chansamilando and Ngalande villages), enabling people to make considerable time savings by transporting their goods to the market themselves, rather than waiting for a lift, which sometimes took up to two days.

Another strategy identified to overcome the absence of an effective transport mechanism was the formation of farmer's co-operatives. The Food Reserve Agency (FRA), created by the Ministry of Agriculture, Food and Fisheries (MAFF) to distribute inputs to farmers on a credit scheme, only provided agricultural inputs to farmer's co-operatives, to ensure post-harvest repayment. Many farmers interviewed objected to this process of acquiring fertiliser "...politicians use good vehicles to this area during elections, can't they use the same vehicles to bring fertilisers?" (Men's group, Muchaka village). Co-operatives enabled individual farmers to provide sufficient collateral, as well as a down payment for the fertiliser, so they could increase agricultural productivity and sustain an income. Co-operatives also hired vehicles collectively to reduce transport costs associated with the collection of fertiliser.

Livelihood strategies observed at the village level focused principally on marketing and income generation. Bartering, for example, was undertaken in the Copperbelt, and predominantly in Northern Province. Field study participants found bartering to be an important trading mechanism that strengthened their 'social capital', although some villagers complained of being undercut by traders, resulting in weakened 'financial capital'.

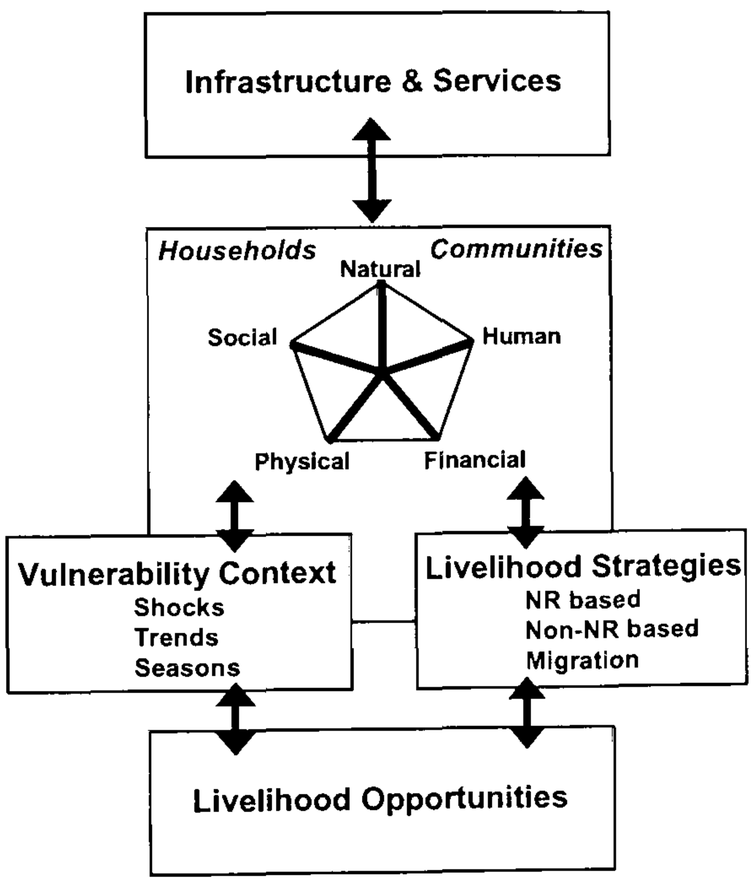
Other strategies included charcoal production for sale at the road side and market, and beer brewing by women for sale within the village. Participants also indicated that more affluent households in possession of a motorised hammer mill (of which there were apparently relatively few) charged neighbouring households for its use in grinding maize into mealie meal, which resulted in significant time savings. Respondents could

not however quantify such time savings and did not indicate what they were charged for using the mill.

4.6 Sustainable Livelihood Analysis

This section will attempt to apply results of the survey data in Zambia to a Sustainable Livelihoods Framework (see Figure 4.7). Examining key components of the framework in the context of the Northern and Copperbelt Provinces enables interpretation of the main factors that affect people's livelihoods and to compare them between provinces. Perhaps livelihoods analysis should not be used to recommend where transport investment should be prioritised in one region of a country over another. Rather, it can draw on discussions with the rural poor, and highlight where components that influence livelihoods are weak and require further investigation and perhaps investment.

Figure 4.7: A sustainable livelihoods framework



4.6.1 Northern and copperbelt provinces compared

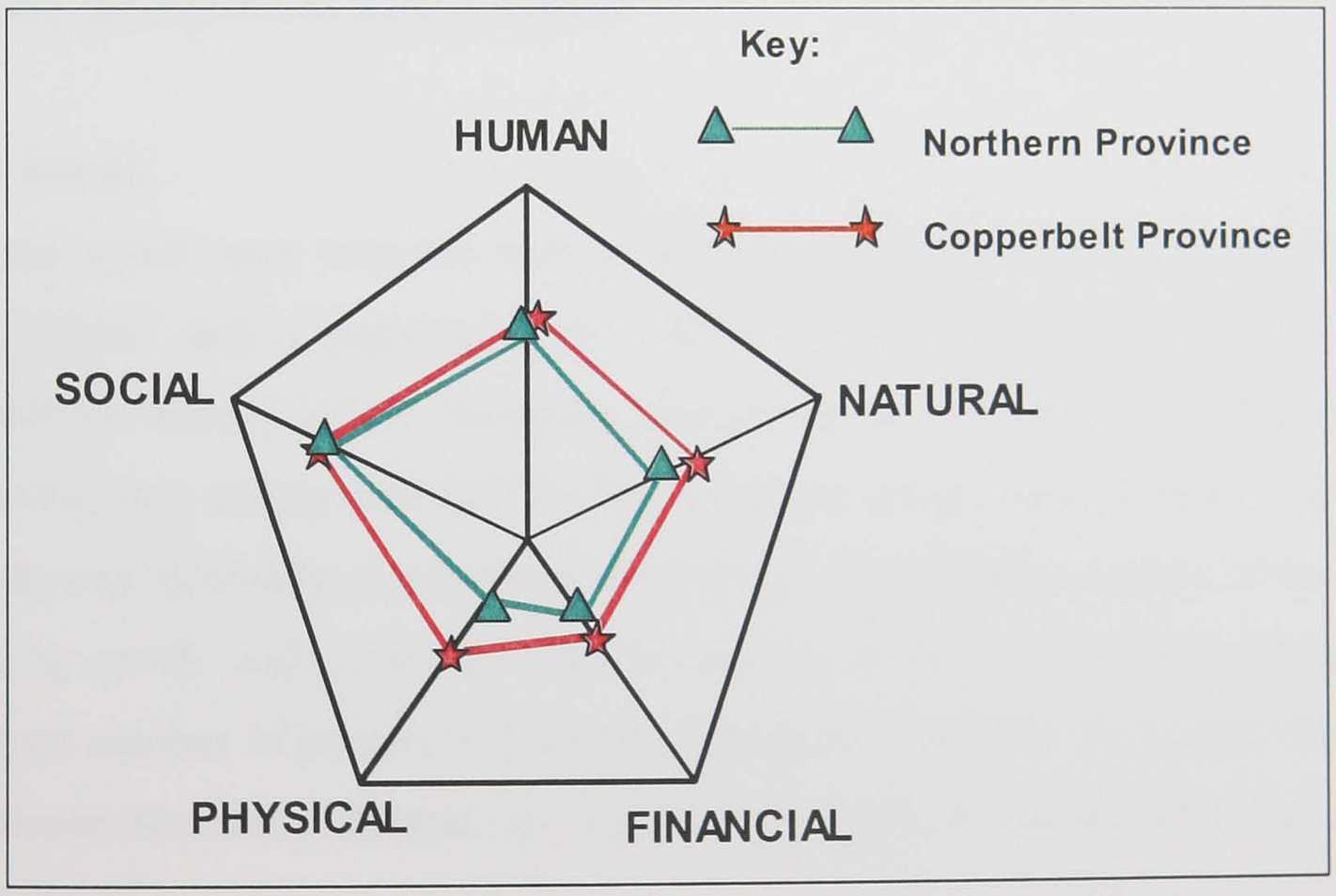
The following analysis compares the assets of Northern and Copperbelt Provinces in Zambia and ways in which the rural poor in each region overcome transport constraints, which weaken their livelihood potential.

Capital Assets

Livelihood assets indicate stocks of capital that can strengthen people's ability to achieve positive livelihood outcomes (please refer to Box 2.2, Chapter 2 for a definition of capital assets). Substitution or diversification of different capital assets (human, social, physical, financial and natural) has the potential for strengthening overall asset endowments for improved livelihoods.

Through the application of livelihood analysis data onto the asset pentagon (see Figure 4.8), declining capital assets can be identified and possible interventions to reinforce existing assets explored. The further away from the central point of the pentagon an asset plot lies, the greater the influence on livelihood outcomes. Ideally, each plot on the pentagon will show increasing access to all assets.

Figure 4.8: Livelihood assets for transport:
Northern and Copperbelt provinces compared



The asset pentagons in Figure 4.8 (highlighted in red and green) have been drawn subjectively by the researcher, using information obtained from the PA and questionnaire surveys. Arguably, quantitative evidence is required to support their assertions (see Chapter 6 for models developed to quantify livelihood assets). However, they indicate overall differences in capital stocks available to the rural poor in Northern and Copperbelt Provinces, which are summarised next:

Human Assets:

- Human capital available to the rural poor living along rural feeder roads in 2000 can be considered similar in Northern and Copperbelt Provinces
- Catchment area of RHCs typically extended beyond 30km and 3,000 people (minimum population required for a health post or clinic) (GoZ, 2002a). Fees vary between clinics but method of payment was similar across provinces. Problems of physical and financial access to basic health care were similar in Northern and Copperbelt
- Access constraints to primary schools was also similar between provinces. Distance to school being a priority concern. Principle mode of transport to school is on foot or bicycle. Fee payments were provided in cash or kind in both provinces
- Copperbelt's asset base was marginally stronger due to proportion of economic activity. Hence, greater scope for formal employment in commercial centres where the copper mining industry predominated and the service sector was growing. There were a greater number of secondary schools available to pupils in each district of Former Ndola Rural. The Copperbelt has one of only two universities in the country, giving rise to local enterprise.

Natural Assets:

- Natural assets vary between survey provinces. Northern Province has an area of 147,826km^2 and a population of 1,407,088 (Central Statistical Office, 2003). Population density is low, therefore land resources abundant. Chitmene (slash and burn) farming widely practised by Bemba ethnic group, hence natural resources for livelihoods gradually diminishing. Scattering of population makes it increasingly hard to justify and prioritise road investment or to relocate services where the greatest number of people will benefit. Livestock available for animal draught has decreased because of disease, yet the Bemba people do not traditionally keep oxen or donkeys
- Inhabitants of Chilubi and Luwingu Districts benefited from the fish stocks found at Lake Bangweulu, as do people in Kaputa and Mpulungu who can utilise resources at Lake Mweru Wantipa and Lake Tanganyika respectively (water and wetlands cover about 5% of the area)
- The Copperbelt has an area of 31,328km^2 and a population of 1,657,646 (Central Statistical Office, 2003), hence, greater population pressure. Yet it benefits from a more compact road network that penetrates all rural districts giving rise to rural-urban linkages. Farmland in Mpongwe District is especially fertile

- The use of animals for transport was a culturally accepted practice among the Lamba ethnic group (Copperbelt Province), yet corridor disease has severely diminished cattle stocks, as in Northern Province
- The Copperbelt contains no lakes, and the river networks have no potential for supporting a transport network.

Financial Assets:

- Councils in both provinces prioritised investment where agricultural productivity was high, resulting in further isolation and marginalisation of least productive districts, as is the case in Lufwanyama District, Copperbelt
- The surveys did not reveal any regular inflows of money into rural areas in the form of pensions or remittances, although there would seem to be more scope for both forms of income in the Copperbelt where some household members were formally employed in the towns of Kitwe and Kalulushi, or where former miners undertake farming activities in rural areas
- Access to credit remains unachievable by many poor households in Northern and Copperbelt Provinces because they have few material assets to use for means of collateral and are therefore unable to repay loans to invest in transport modes or small-scale enterprise. Farmers in the Copperbelt however, benefit more from the presence of donor funded programmes which include credit schemes such as the Social Recovery Project.

Physical Assets:

- The pentagon in Figure 4.8 indicates that physical asset stocks have the greatest variation between the provinces under survey. Due largely to it's size and limited funding by the Road Fund under the Road Sector Investment Programme (ROADSIP), Northern Province had an inefficient feeder road network whose impact on the rural poor is manifold. Vehicle stocks diminished because the road condition caused irreparable damage to vehicles, leaving fewer transport services to serve rural feeder roads with inflated fares
- Similarly, in the Copperbelt transport services became inaccessible to the extreme poor and transport terminals and storage facilities obsolete. Yet, the spate of funding for the rehabilitation of eight feeder roads in the Copperbelt (140km of road funded by the European Union in 1997) improved access to basic health and education services and markets for the rural poor up until the time of the survey in 2000

- Road investment was more sporadic in the less productive Northern Province and tended to be spread thinly between several roads
- Ox-carts were more commonly used in the Copperbelt for goods transit and farming.

Social Assets:

- Community networks and stakeholder groups were evident in most communities. Women's groups, farmers co-operatives, and village committees disseminated information, provided support to neighbouring households, and lobbied local government officials for funding and materials with which to undertake construction and maintenance of road infrastructure
- Evidence of community self-help road maintenance indicated high social capital. The questionnaire surveys indicated that 72% of respondents in the Copperbelt and 74% in Northern Province were willing to provide voluntary labour for road improvements with the help of an engineer
- Beer parties, funerals, weddings and social trips to visit extended family relations in general contributed to the well-being of the rural poor. Formal social groups, such as the Parent-Teachers Association (PTA), ensured that village services were run effectively. In Mukuka Mfumu, Mungwi District at the time of the survey, the PTA assisted under-resourced teachers by collecting primary school fees, sometimes paid for in cash or kind, for example with cassava. The cassava was sold at market in Malole and the PTA delivered the school fees to the education authority.[32]

The institutional environment at the time of the field study in 2000 used for strengthening these existing capital assets is discussed next.

4.6.2 Policies, institutions and processes

Policies, institutions and processes operate at the micro (household), meso (local government authority) and macro (national politics and international aid) level in Northern and Copperbelt Provinces. The enabling environment of rural producers disappeared with structural adjustment in the 1980s and 1990s, the impacts of which are extensive. Livelihood opportunities have been affected by the public sector reform programme, which has seen the removal of subsidies on production and consumption,

[32] Personal communication with Mr J. Makasa, Headmaster of Mukuku Mfumu school, February 2000.

cost sharing in the provision of health and education, and removal of public transport services.

Private sector investment in all sectors is not yet sufficient to fulfil demands of the rural poor in relieving the effects of poverty. Farmers can benefit from private fertiliser and seed manufacturers such as Omnia, yet small-scale farmers have neither the capital nor transport means required to access inputs from private producers. Likewise, private transporters operate on an informal basis, characterised by infrequent, unreliable and costly services. Improvements to transport infrastructure have, in recent years been sub-contracted to private contractors such as Akapesi General Contractors and Kafula General Supplies and Contractors (Luwingu). These contractors commonly use labour intensive techniques to undertake rehabilitation and maintenance where the local councils have no capacity to do so.

In addition, there are examples of donor funded programmes that have experienced problems in Zambia. For instance, in the Copperbelt, funding for the Small-holder Development Programme (SDP) was withdrawn in 1995 due to alleged corruption and change of project management, after seven years of success.[33] Similarly, the DFID funded Livelihood Enhancement through Empowerment and Participation (LEEP) project was proposed in 1998. The project intended to invest £30 million to help poor people enhance their livelihoods through community empowerment in Northern Province, but was withdrawn before it even started because of concerns over capital investment and its potential for success (see Ashley and Carney, 1999 for background details on LEEP).

Section 4.6.3 will discuss vulnerability issues and livelihood strategies of poor people in Northern and Copperbelt Provinces.

4.6.3 Vulnerability and livelihood strategies

The Table below summarises measures of vulnerability in both survey provinces and strategies used to counteract risk and adversity:

[33] Personal communication with Brighton Kabanda, District Agricultural Co-ordinator, Masaiti District, March 2000.

Table 4.1: Summary of vulnerability indicators and livelihood strategies in Zambia

Province	Vulnerability Indicators	Livelihood Strategies
Synergies between Northern & Copperbelt Provinces	▪ Food insecurity especially in wet season due to withdrawal of subsidised fertiliser inputs ▪ Road impassability due to seasonal rains leading to high morbidity and mortality because inaccessible RHCs ▪ Population growth and lack of resources (health, education, food, transport services etc) to cope with demand ▪ Demographic changes – spread of STIs and AIDS leading to decline of economically active adult population. ▪ Livestock diseases leading to loss of income, loss of potential transport mode (animal draught including ox-carts).	▪ Bartering for clothes, shoes and household commodities, in the absence of transport means to access markets ▪ When rural transport services cease during the wet season, villagers walk or cycle to essential amenities (using a 'machila' stretcher for medical emergencies)[34] ▪ Community groups collectively hire vehicles to obtain agricultural inputs/take produce to market thus sharing costs ▪ Motorised trips used for multiple activities e.g. Taking maize/millet to the grinding mill and then mealie meal to market for sale to save time and money ▪ In the absence of a cash income, health clinic and school fees are paid in kind (food crops) ▪ When harvests are poor, households diversify their source of income with e.g. Beer brewing and knitting for sale/exchange
Distinctions: Northern Province	▪ Land use conflict between national parks and farmland hence limiting production potential (average land holding 0.5 to 2 hectares).	▪ Small-scale farmers migrate into the bush & practise 'chitemene' to propagate fertile soils.
Copperbelt Province	▪ Infrequent delivery of drugs to RHCs because of road condition leads to the misuse of antibiotics at RHCs affecting immunity of vulnerable groups including young, elderly and infirm.	▪ Remittances received from urban relatives ▪ Rural households able to utilise larger, more competitive markets in Kitwe, Ndola, Lusaka because of shorter distances and travel costs.

[34] A machila is an improvised stretcher, usually laid across a bicycle to transport the sick to hospital.

4.7 Implications for Improved Livelihood Outcomes

4.7.1 Improved accessibility

Recommended transport interventions for improving sustainable livelihoods in rural Zambia might include research and development into increasing the supply of different types of IMT. The propagation of a 'critical mass' would serve to reduce transport operator and vehicle hire costs, foster the provision of spare parts manufacturers and maintenance, and promote local enterprise in areas where small-scale farming is obsolete. IMTs would be of particular service to extension and outreach workers in the delivery of health care and agricultural inputs.

The IMT project, conceived in 1997 by the Technical Development Advisory Unit (TDAU) of the University of Zambia under ROADSIP, draws on pilot studies to establish the appropriateness of different IMT modes and capability of the rural poor to manage credit for their purchase.[35] The TDAU project intends to create awareness of IMT benefits for intra and inter-village travel, and to foster greater demand for IMT innovations, in particular animal draught technology, which is culturally obsolete in much of the country. In addition to IMT promotion, on-farm training programmes incorporating animal husbandry, animal health, harnessing and ox/donkey training would also be beneficial to target users. Effective training and veterinary care will help prolong the working life of draught animals and improve their efficiency both as a means of long distance transport and for ploughing.

The government funded Palabana animal draught power development programme has proved effective in promoting ox-powered transport and more recently donkey power through training of extension staff in animal draught power. Palabana issues a bi-annual newsletter for agrarians and extension workers providing advice and information on price indicators for equipment, spares and veterinary drugs. Yet, the Palabana Farm Power and Mechanisation Centre is under-funded and requires capital investment.[36]

The PA exercises undertaken in Northern and Copperbelt Provinces highlighted the need to supplement rural transport services with IMTs. Bicycles were virtually the only

[35] Personal communication with Jonathon Tamba Tamba, TDAU, March 2000.
[36] Personal communication with Sitali Kalaluka, Palabana Farm Power and Mechanisation Centre, March 2000.

mode of IMT consistently used throughout rural Zambia, predominantly to travel between the village and main road from where motorised travel was undertaken to market. Arguably, informal transport services would be unlikely to fulfil all the travel requirements of the rural poor because of the nature of the feeder road infrastructure, remoteness of rural inhabitation and cost of supply.

Yet, the PA respondents who used discussion starters to begin a dialogue on modal choice (see Figure 3.4, Chapter 3), indicated the positive impact of bicycle use on time, condition of merchandise after transit and personal health (in contrast to headloading, which has the potential to cause ill-health (TRL, 2002)). Hence, IMT provision would fill an important gap in the market. The relaxation of legislation on informal transport services would also help in increasing the number of private transporters on the road thus creating a competitive market to reduce the cost of motorised fares for rural households.

In 'Roads are not Enough', Dawson and Barwell (1993) investigated the option of non-transport interventions to increase accessibility by reducing the need for travel by rural people. They suggested that trip time can be reduced and accessibility increased, by reducing the distance that people have to travel to reach facilities. The location of agricultural input supply centres, markets, water and firewood sources, grinding mills, schools and health clinics would impact positively on rural livelihoods because of time, capital expenditure and energy savings. A non-transport approach to poverty reduction is explored in Chapter 5.

4.7.2 Improved institutional capacity

Sustainable Livelihoods Approaches can be used as a tool to establish problem sectors and focus interventions and investment where it will reap the most economic and social benefits. Consultation is a useful means of identifying priority concerns and requirements of rural households, and informs the decision-making process so as to limit investment on interventions where they are not actually required.

The Social Recovery Project (SRP) is a community based programme funded by the World Bank. The road component within SRP is the Community Transport Infrastructure (CTI) and is a sub-component of the Community Accessibility Component of the Road Sector Investment Programme (ROADSIP) in Zambia. The aim

of the CTI is to improve rural accessibility by bringing more of the road network under regular maintenance. The project became effective in 1991 and was replaced by the Zambian Social Investment Fund (ZAMSIF) in 2000, to complement other poverty reduction programmes.[37]

The SRP is implemented on a cost sharing basis, with communities identifying their needs and contributing at least 25% of the total project cost, with the SRP providing the remaining 75%. Communities are required to apply for SRP funding with the help of local councillors, and a field appraisal is undertaken to establish a consensus on community priorities before work commences.

The SRP is a successful donor funded project in Zambia, and promotes ownership of community roads, as well as improving the physical assets of the rural poor. While roads alone cannot solve the travel and transport constraints of the rural poor, the SRP empowers communities to help themselves rehabilitate existing infrastructure.

4.8 Concluding Remarks

In conclusion, the research undertaken in Zambia highlighted extremes of poverty, vulnerability and remoteness in a sparsely populated country of vast dimensions. The PA exercises undertaken with rural communities revealed that the lack of physical access to social services and markets is a hindrance to their income earning opportunities, livelihoods development (characterised in part by good health and education), and general well-being. In addition, access costs of health and education services, as well as rural transport services was cited as a serious problem, and one that has been aggravated by structural adjustment.

In summary, the principle outcomes of the case study are:

- Mobility is positively correlated with opportunity – the least mobile communities are, by their nature, the most vulnerable
- Level of personal mobility determines where and how far poor people can travel and is directly related to the availability and condition of means of transport (encompassing transport services, IMTs, and the road on which they travel)

[37] Personal communication with Benny Zulu, Programme Co-ordinator, SRP Microprojects Programme.

- Where personal mobility is lacking, poor people compensate by adopting risk minimising strategies (including bartering, group vehicle hire to evacuate harvests to market and migration into the bush)
- Households are at risk of vulnerability when social networks (friendships and kinships) that reinforce risk management strategies are absent.

The sustainable livelihoods analysis in Section 4.6 has examined the potential for application of Sustainable Livelihoods Approaches to practical research. It reviews ways in which they can emphasise the strengths and weaknesses of rural communities, and lead to possible mobility solutions that facilitate access to basic needs and services.

The next Chapter gives an account of fieldwork undertaken in Cameroon that investigates non-transport interventions as a means of alleviating the transport burden and negating the need for rural travel. With sufficient capital investment in social services to supplement road rehabilitation and construction, the need to travel long distances might become obsolete and human capital resources could be concentrated to generate larger incomes and a more sustainable livelihood.

CHAPTER 5: CAMEROON CASE STUDY FINDINGS

Research on which this Chapter is based was carried out between September and October 2000. It was presented at the 74th EAAE Seminar on Poverty and Rural Livelihoods, 12-15 September 2001, Imperial College at Wye, and subsequently published in the seminar proceedings (Davis, 2001).

5.1 Introduction

The case study of transport and sustainable livelihoods in Zambia supports much of the literature and empirical findings from other case studies (Hine *et al*, 1983; Dawson and Barwell, 1993; Airey and Cundill, 1998) in Chapter 2, revealing many transport constraints that impact on livelihood activities of the rural poor. The poor road condition combined with inadequate transport services and IMTs in Zambia make access to rural health centres, as well as local markets prohibitive.

Conventional prioritisation procedures for investment in road infrastructure and maintenance allocate investment to areas where common development indicators are evident. These include population density, agricultural productivity, and number of social services available in the immediate locality. However, these measures for prioritising funds can marginalise the remote poor who do not qualify under these criteria. Hence, the poor are often excluded from the physical means by which they can access health and education services as well as income earning opportunities that are prerequisites for economic development.

The Cameroon field study investigated the transport constraints of the rural poor, and identified contrasts in capital assets available to the poor between two very diverse regions of the country. The case study also explored the cost of basic service provision in Cameroon (including rural health clinics, primary schools and water sources), as a viable alternative to road construction and maintenance.

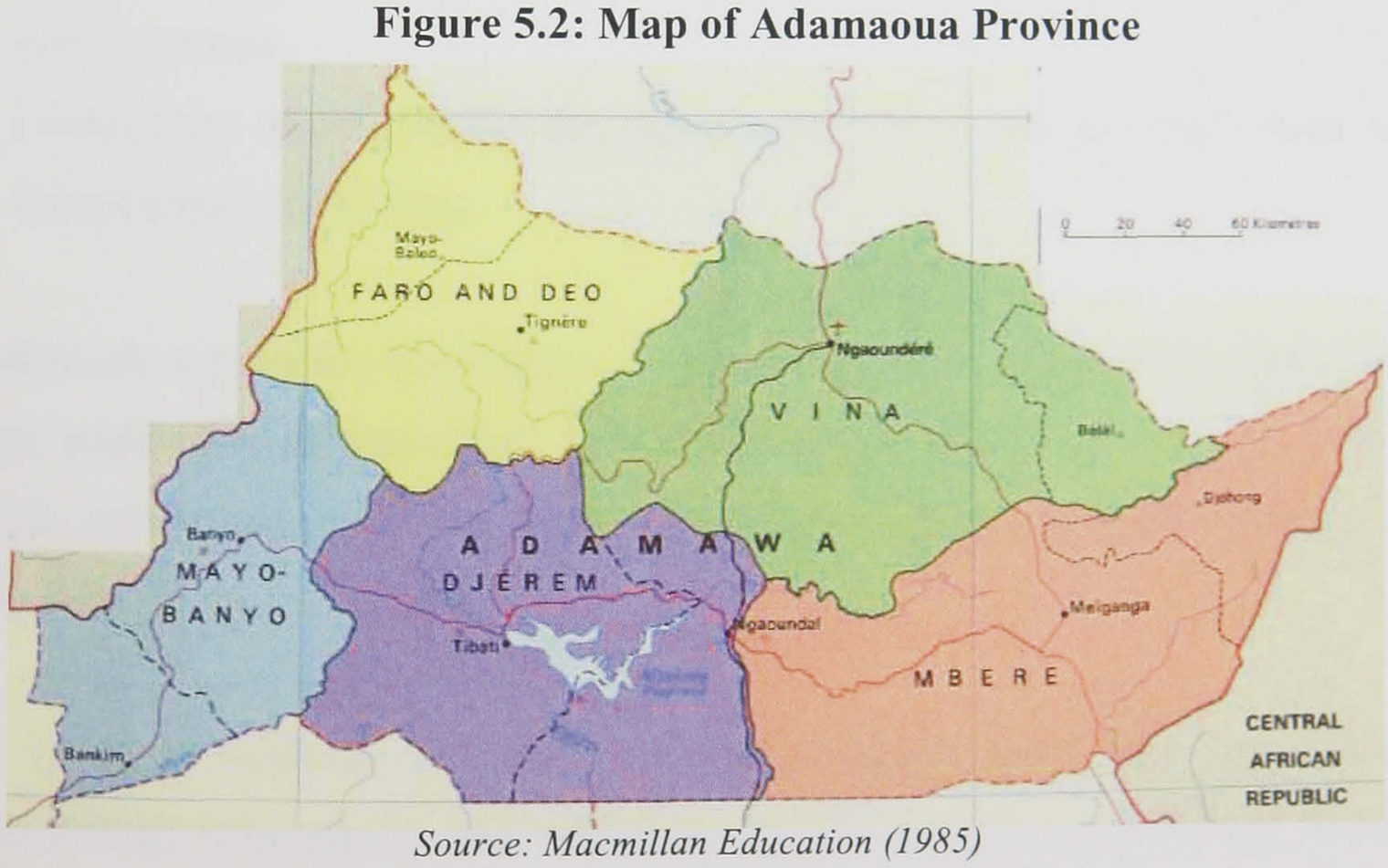
5.2 Background

Cameroon has a surface area of 475,440km^2, and is home to French and English speakers resulting from territorial division under French and British mandate until 1961 (CIA World Factbook, 2004b). Cameroon is a highly urbanised country with 48.2% of the population living in towns and cities. The provinces selected for field study are predominantly rural, Southwest Province (shown to the right) containing 8% of Cameroon's 16 million[38] population, and Adamaoua Province (below) accommodating just 4.7% (Ministry of Economy and Finance, 1999).

Figure 5.1: Map of Southwest Province

Source: Macmillan Education (1985)

Figure 5.2: Map of Adamaoua Province



Source: Macmillan Education (1985)

Principle exports from Cameroon include cocoa, rubber, oil palm, tobacco and bananas, all of which can be found in Southwest Province. Due to the savannah vegetation in the North of the country, Adamaoua Province has fewer cash cropping activities, and the inhabitants depend mostly on livestock farming as their principle income earning activity.

[38] The CIA World Factbook (2004b) for Cameroon records a total population of 16,063,678.

Cameroon is favourably endowed with oil reserves and rainforests. Since 1990, the government has embarked on various international development agency programmes to promote business investment, increase efficiency in agriculture and improve trade. The government completed a three year structural adjustment programme in 2000. However, the IMF is pressing for further reforms comprising budget transparency, privatisation and poverty reduction (CIA World Factbook, 2004b).

The economic crisis of 1994 brought about the devaluation of the CFA Franc, price inflation and changed terms of trade between urban and rural areas. Subsequently, the Structural Adjustment Programme was implemented in 1995, and the privatisation of public enterprises and administrative streamlining came into effect (Amin and Dubois, 1999). In a bid to reform the macroeconomic process in 1998, the government resolved to tackle poverty with a strategic analytical framework (Amin and Dubois, 1999). The framework considered three economic dimensions of poverty:

- Income poverty: which expresses a standard of living through the measurement of income
- Standard of living: which relates to the provision of basic needs including access to social services
- Capabilities: which express the capital assets of people and helps them to build a decent standard of living.

Livelihoods approaches encompass all three dimensions and identify capital assets of a given population incorporating income, access to basic services and non-material wealth, categorised under the five capital assets (natural, physical, human, social and financial).

The research methods for the Cameroon fieldwork have been described in the Methodology (Chapter 3). The following sections provide an overview of livelihood constraints, strategies and assets affecting the rural population of Cameroon, and specifically review particular assets available to the Southwest and Adamaoua populace. The analysis of data displayed in this Chapter is based on averages per household sampled. A comparison of capital assets between these two provinces can be found in Section 5.6.

5.3 Travel and Transport in Rural Cameroon

Cameroon's rural roads extend 34,300km, and are predominantly unpaved (30,000km) (CIA World Factbook, 2004b). Poor drainage conditions have led to serious erosion along road surfaces, producing deep and dangerous gullies, and are responsible for large pools of water following heavy rains, rendering roads impassable for vehicles (Génie Civil Magazine, 2000).

Many villages surveyed in Cameroon were found to have no access to public transport services. Walking and headloading were the predominant modes by which people transport themselves and their goods. The field surveys found that villages received public transport services as little as once a week on market days. Others that were generally larger in size and population, like Kognoli in N'gaoundéré District, Adamaoua Province were served at least once a day by a public transport vehicle.

As a result of the rural road condition, vehicle operating costs tended to be high, especially due to high maintenance requirements and high petrol consumption. As a result, transport operators were discouraged from servicing them. Operators who used such roads transferred the burden of operating costs to passengers with high transport fares. To maximise profits, it was common practice for vehicle operators to overload their vehicles or modify them to increase carrying capacity.

Inadequate road conditions in rural areas impacted on local communities in a variety of ways. Access to essential services such as health, education, agricultural extension, water and wood fuel could be impaired and exacerbated by excessive transport fares, which were prohibitive to the rural poor.

Scatterplots were produced from the household questionnaire data (see Appendix B2) to illustrate the relationship between passenger fare per km and distance in the two provinces surveyed, as suggested by the trend lines in Figure 5.3a and 5.3b. These graphs show a general decrease in fare per passenger kilometre with increasing distance (in this analysis fares are related to distance only, and do not account for road quality which can be of equal significance to transport service charges).[39]

[39] Both graphs in Figure 5.3 have 'outliers' beyond 100km distance. These plots have altered the course of the trend line, but indicate that some of the trips recorded were for distances of over 200km, which reflects inter-urban trip-making.

Figure 5.3a: Relationship between average passenger fare per km and distance in Southwest Province, Cameroon (2000)

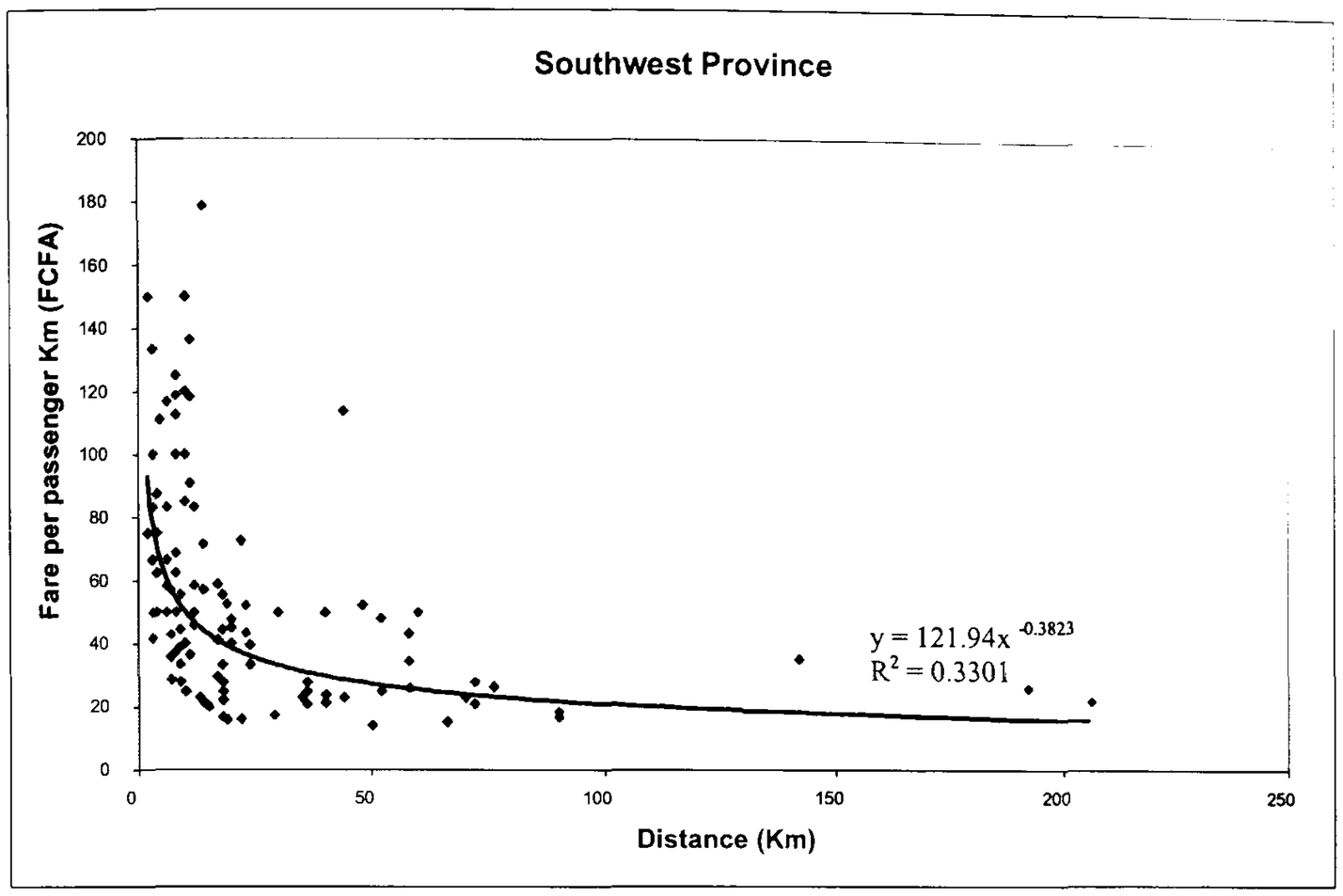


Figure 5.3b: Relationship between average passenger fare per km and distance in Adamaoua Province, Cameroon (2000)

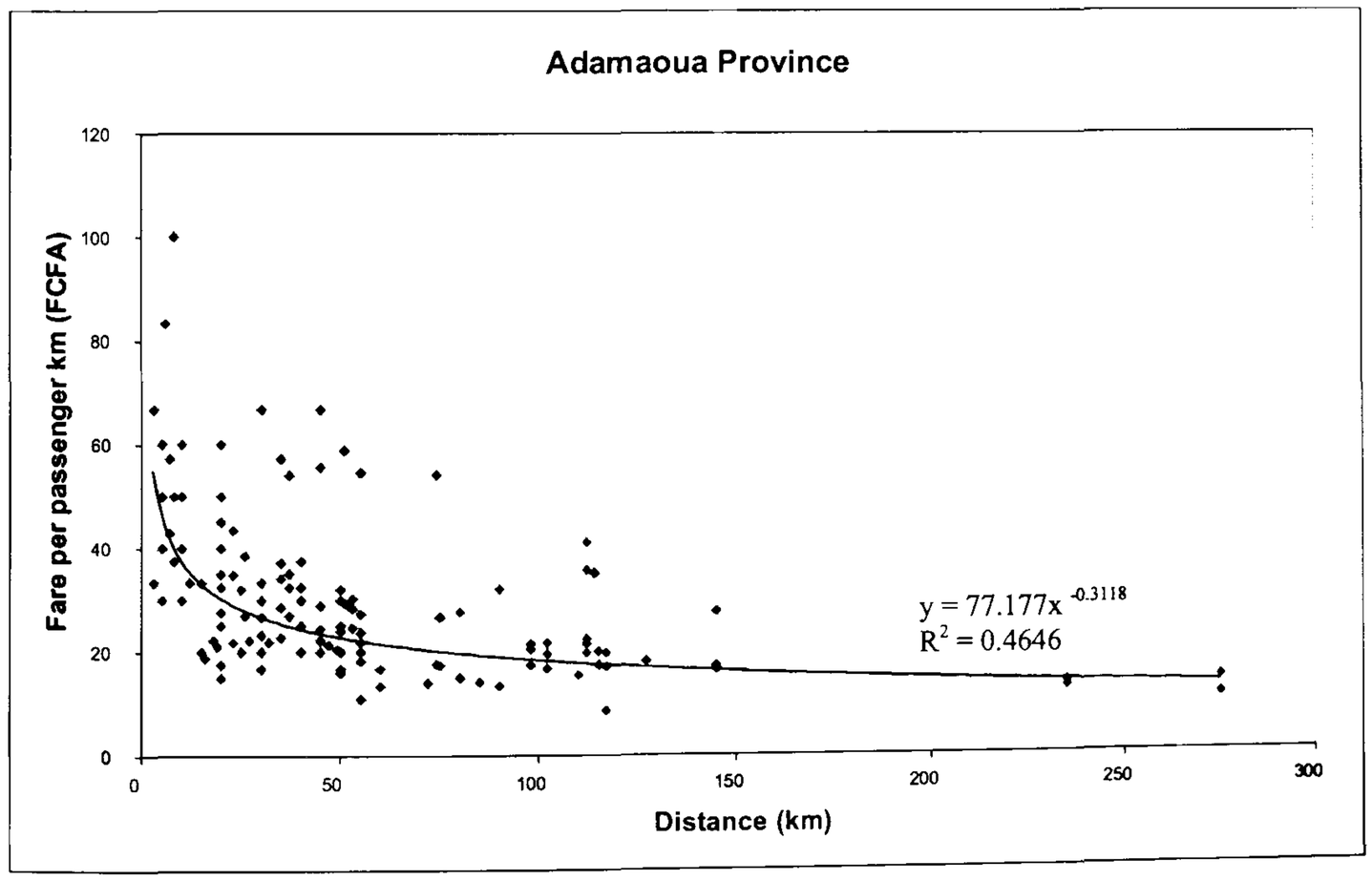


Table 5.1 contains average fares for trips at 10, 50, 100 and 200km distance intervals, from the household questionnaire data.

Table 5.1: Relationship between passenger fare (FCFA)[40] per km distance in two provinces of Cameroon (2000)

Province	District	10km	50km	100km	200km
Southwest	Ekondo Titi	67.7	39.9	31.8	25.3
	Muyuka	53.9	37.8	32.5	27.9
	Buea	49.8	19.8	13.4	9.0
Adamaoua	Ngoundere	41.3	30	16.7	12.7
	Mbe	37.1	24.5	20.5	17.1

Table 5.1 indicates that long distance inter-urban journeys were more cost effective than shorter trips to localised markets. Where regular services were running on an efficient transport network, competition was generated between operators to maintain affordable fares (please refer to the consumer surplus approach in Section 2.2.1, Chapter 2). In remote areas however, where private transporters were more infrequent and fewer in number, fares remained high to account for fuel consumption and maintenance requirements of the vehicles. Hence, as illustrated in Figures 5.3a and 5.3b, the further the distance travelled, the more cost effective the journey.

The data indicate that districts in Southwest Province had higher transport fares than in Adamaoua Province (except in Buea District above 50km). Competition between transport operators in Adamaoua Province had brought down fares,[41] while strong syndicates in the Southwest Province ensured that passenger fares remained high.[42]

The graph in Figure 5.4 indicates that the distance and cost of travel to key amenities is not the only factor that affects the number of trips per household per year, trip purpose is also a determining factor.

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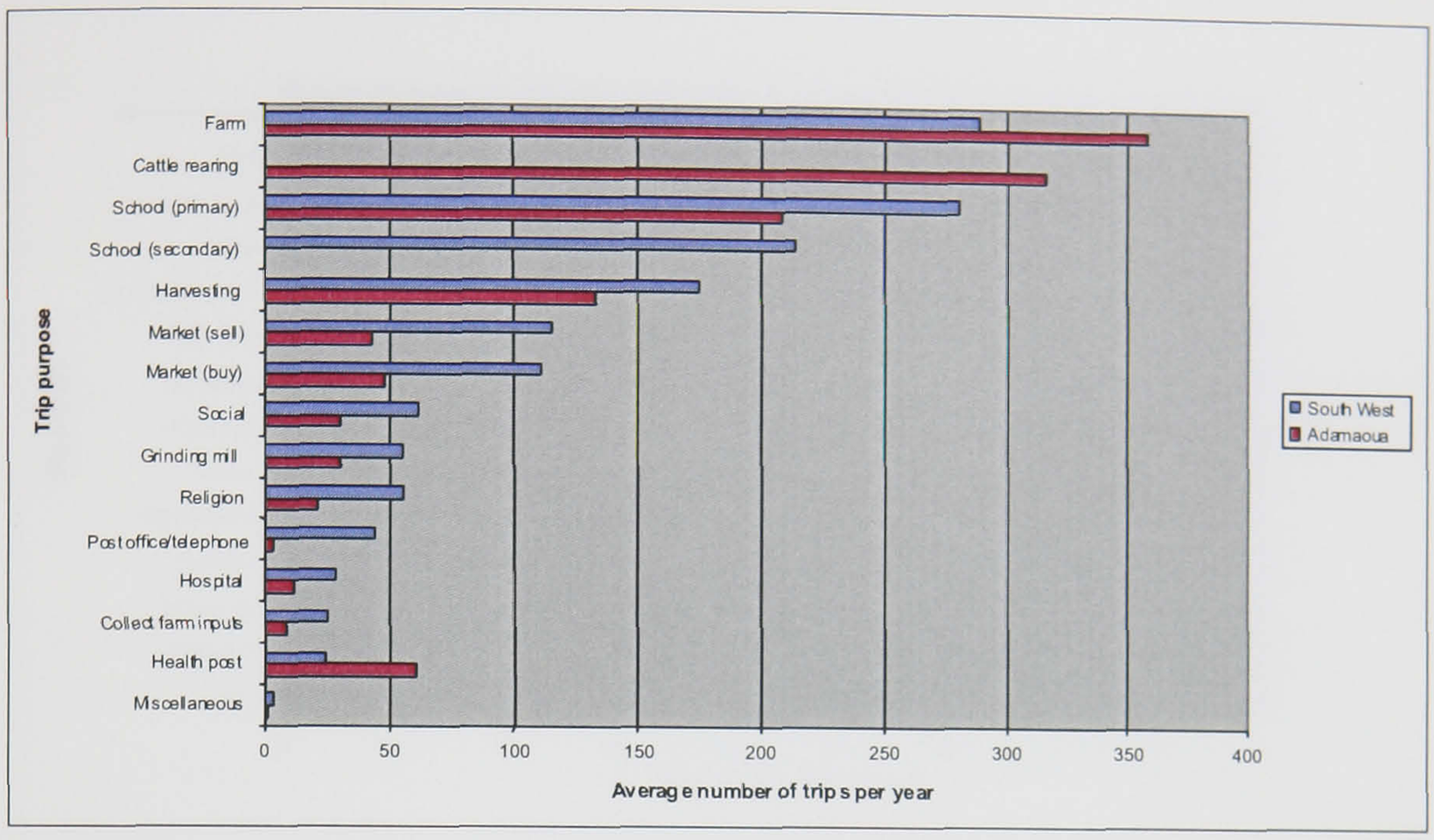
[40] The exchange rate at the time of research was FCFA (Communauté Africaine Financière Franc) 740 to 1 US Dollar.

[41] Personal communication with Mmamba Dieudonne, Provincial Delegate for the Ministry of Transport, Adamaoua Province, September 2000.

[42] Personal communication with Mmamba Dieudonne, Provincial Delegate for the Ministry of Transport, Adamaoua Province, September 2000.

Figure 5.4: Frequency of annual household trips by purpose in Southwest and Adamaoua Provinces, Cameroon (2000)

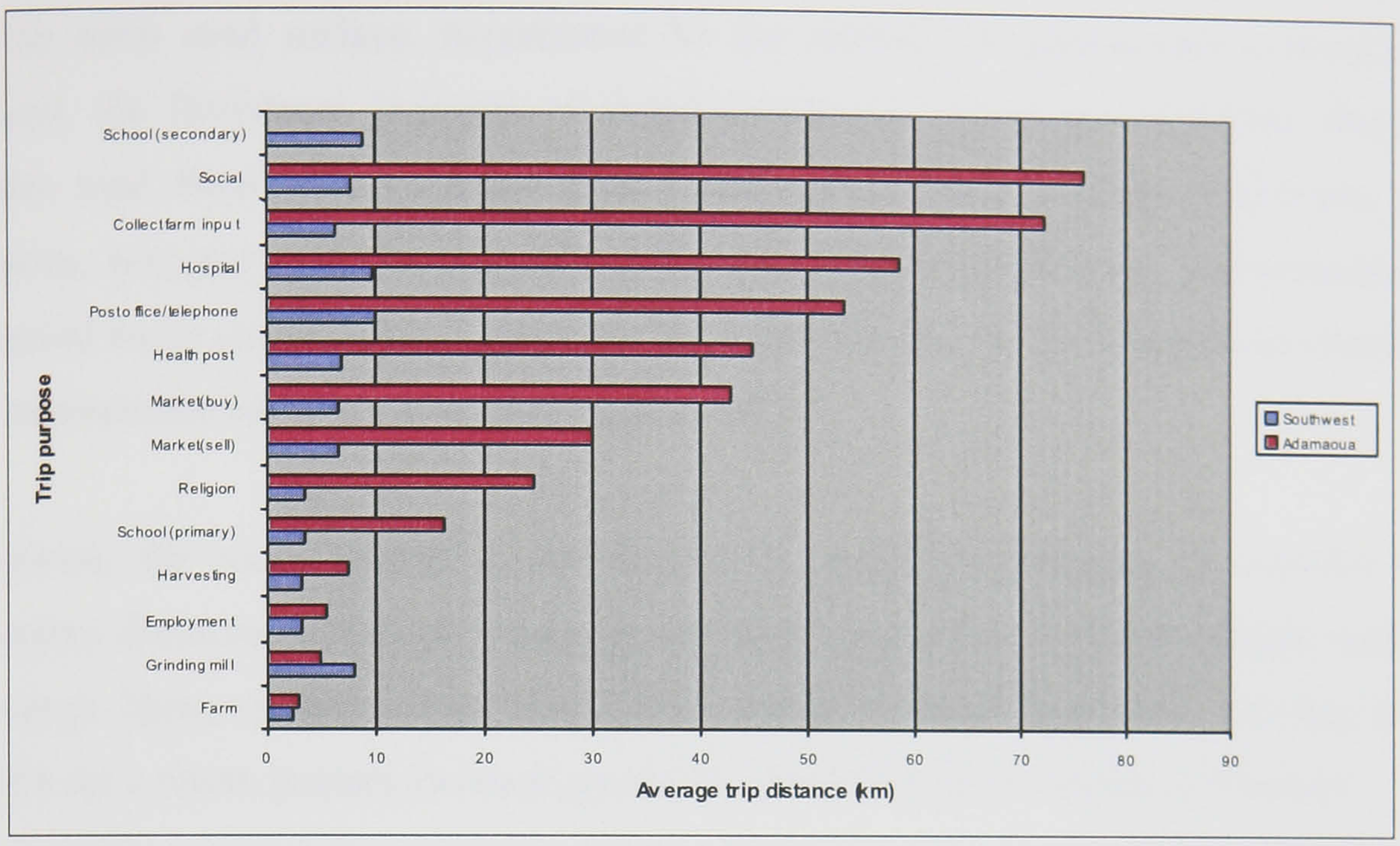


The graph shows variation in the number of trips per household per year for different trip purposes between provinces. However, a common trend can be observed, with farms, schools and harvesting attracting the most number of trips in the Southwest *and* Adamaoua. Followed by trips to market (undertaken once a week in Adamaoua and twice a week in the Southwest) and for social activities (including leisure activities, and attendance at weddings and funerals undertaken weekly in the Southwest). The post office, farm inputs, hospitals and health posts attracted the least number of trips.

Farm trips are made almost on a daily basis in Adamaoua Province and respondents recorded an average of over 300 trips for cattle rearing. The province is located in a grassland region that makes it more suitable to rear cattle than in Southwest Province, which is covered with a dense forest.

With the exception of farm trips, and trips to rear cattle, respondents in the Southwest Province made more trips to key amenities than those in Adamaoua Province. This can be attributed to the fact that amenities, such as markets and schools, were nearer to villages in the Southwest Province than in Adamaoua. In terms of distance, only trips to the grinding mill were found to be longer in Southwest Province than in Adamaoua Province. For all other purposes, trips were longer in Adamaoua Province, particularly social trip-making (average of 76km), collecting farm inputs (average of 72km) and visits to hospital (average of 59km) as verified in Figure 5.5.

Figure 5.5: Average trip distance in Southwest and Adamaoua Provinces, Cameroon (2000)



A summary of specific livelihood constraints experienced by the rural poor is given in Section 5.4.

5.4 Livelihood Constraints

Livelihood constraints incorporate factors that prevent rural communities from optimising their livelihood potential both in terms of income generation and quality of life. Livelihood constraints can sometimes be measured as insecurity or vulnerability, brought about by seasonality, trends and shocks that adversely impact on people's livelihoods.

Causal impact analysis exercises (see Figure 3.8, Chapter 3 for a description and sample) revealed that the principle constraint to livelihoods cited among respondents across Southwest Province was the provision of water, followed by the road condition and transport provision. In Adamaoua Province, participants from four out of five villages sampled cited the road as the key problem faced by their community, followed by access to basic education and health care. The following sections summarise specific examples where access constraints impinge on livelihoods of the rural poor, and demonstrate that virtually all activities undertaken by individuals hinge on their mobility and accessibility.

5.4.1 Domestic activities and associated transport tasks

In Adamaoua Province, the movement of cattle to pasture and market can cause damage to the earth road surface, accentuated by the absence of government intervention. Indeed, the Divisional Delegate of Public Works for Adamaoua explained that the feeder road from Mbe to Sassa Mbersi, passing through Vourgne Mamboum and Nyadou, was part of the network of priority roads whose maintenance was ensured and financed on an annual basis.[43] However, PA respondents in both villages confirmed that no maintenance had been undertaken since 1985.

Likewise, the rocky terrain in the Southwest could be damaging to vehicles and therefore discouraged private transport operators from serving remote villages such as Bavenga. Here, villagers would walk 3-4km to hire a vehicle from Ikata, and pay 1,000 FCFA for a return journey (without goods) to travel 5km to the market at Muyuka.

Discussions following a mapping exercise carried out with 9 female and 13 male participants in Bavenga village in the Southwest revealed that poor access to water has been responsible for the out-migration of villagers from Bavenga to Ikata where water is readily available from village wells. During the dry season, Bavenga villagers (usually women) headloaded 20-25kg of water from streams 4km away, more than three times a day. Villagers believed that "with water, development will come," and that people would migrate back to Bavenga where soil fertility and agricultural productivity is very high.

5.4.2 Income generation

In Southwest Province, the principle income generating activity was arable farming, with coffee and cocoa cash crops reportedly being the most profitable. In an attempt to avoid crop spoilage, villagers in Bavenga invested in chemical pesticides and dispensers (the former costing 650 FCFA for one sachet which lasted up to three weeks, and the latter costing 50,000 FCFA bought new), which accounted for approximately 15% of total expenditure. Traders would only travel as far as Ikata to purchase produce, and pay less than the competitive market rate (for example cocoa yams were bought for 2,000 FCFA and sold at 50% profit), hence profit margins tended to be depleted.

[43] Personal communication with Adokara Mamoudou, Divisional Delegate for Public Works, Vina Division, September 2000.

In discussions with villagers from Nkoumbol Kognoli, Adamaoua it emerged that cattle herders had a number of options to maximise their livelihood potential. If they sold their cattle to traders in the village they received 25% less than the 200,000 FCFA they would receive per cow at the market in Yaoundé. However, in order to transport their herd to the capital, they had to first travel 50km to N'gaoundéré on foot and then pay for the train (7,500 FCFA per person and 11,000 FCFA per cow) to Yaoundé. Alternatively they could spend forty days walking the entire distance to Yaoundé and receive the optimum market price for their cattle.

5.4.3 Access to health care

Among survey respondents the most frequent travellers to health clinics was by pregnant women and those in labour. In Njima village, Southwest Province, a group of 5 women who participated in drawing a daily activity chart explained that in the wet season pregnant women had to trek 7km to the RHC in Bekora. In emergencies, patients were transported in pushtrucks borrowed from neighbouring villages or on the back of a relative. In the dry season, women could sometimes get a lift with a transport operator that service the feeder roads connecting Njima with Bekora, but often settled for giving birth at home in the absence of passing vehicles.

A particular complaint of participants who carried out causal impact analysis in Njima and Bavenga (see Figure 3.8, Chapter 3) was that after travelling up to 20km to the nearest RHC and paying between 200 and 600 FCFA for a consultation, patients only received prescriptions. They subsequently had to travel to a pharmacy in the nearest town to obtain medicine. The RHC at Sassa Mbersi in Adamaoua was a case in point. The RHC was 50km from the nearest town at Mbe and only had facilities to treat malaria and typhoid. Villagers who drew a mobility chart in Nyadou village said that they made trips of 40km to the RHC in Mbe because of the lack of trained medical staff and medicines available at Sassa Mbersi RHC, 10km from the village.

5.4.4 Access to education

The provision of primary education was actually revealed to be one of the least important problems of villages surveyed in Southwest Province. The household questionnaire data shows that children walked an average distance of 3.7km to primary schools and 7.3km to secondary schools (see Figure 5.5). School fees in Cameroon were

also withdrawn in 2000,[44] hence financial access to education in rural areas was less problematic (with the exception of uniforms, exercise books and the time cost of getting to school).

In a focus group discussion with 18 women from Hangloa in Adamaoua, it transpired that none of them had attended schools teaching the national curriculum. Instead, girl children were encouraged to attend Islamic schools to learn Arabic and teachings of the Koran but were often married by the ages of 12-15 years.

The household questionnaire surveys showed an average distance to primary school of 16.5km in Adamaoua (see Figure 5.5). None of the survey respondents recorded that their children attended secondary school. In Hangloa, male participants drew a mobility chart indicating that there was a tendency for more affluent cattle owners to send their children to school. They reported that cattle rearers lead a nomadic existence and tend not to educate their children because they migrate frequently and because of the costs associated with attending school.

5.5 Livelihood Strategies

Livelihood strategies adopted by groups encountered in the Cameroon surveys extended beyond income generation. In fact, many strategies compensated for ineffective transport provision. In Bavenga village for example, in a resource mapping exercise water collection from streams was reported to be a lengthy and arduous task, and households collected rainwater from their roofs instead. In 1982 a researcher constructed a well in Ikata. The well was powered by a generator that ran on fuel, and villagers from Ikata paid 200 FCFA per person per month for water and outsiders from Bavenga paid 200 FCFA per litre, in order to pay for the running costs of the well.

Similarly, in Vourgne Mamboum in Adamaoua, a daily activity chart undertaken with a group of 8 men found that each household paid an annual fee to obtain water from a communal well (1,000 FCFA per year for married couples and 500 FCFA per year for unmarried people). Frankenberger and Garrett (1999) suggest that social networks that help communities manage common resources, in this case a well committee, are

[44] Personal communication with Evelyn Nojang, Provincial Delegate for the Ministry of Education, Southwest Province, September 2000.

'proactive' uses of social capital that revolve around acquiring services, managing common property resources and reducing transaction costs.

In Adamaoua Province, concerns over the local road condition caused by a combination of lack of maintenance, heavy rain and exacerbated by the movement of cattle herds on the earth roads, have resulted in the adoption of spot improvement initiatives. The road connecting Hangloa to the national trunk road linking Garoua and Maroua was last repaired in 1985 according to a group of 25 men from Hangloa village. Through discussion it transpired that villagers were regularly mobilised to carry out emergency interventions by filling in potholes and creating diversions to prevent the further dilapidation of existing roads and tracks.

Plate C6, Appendix C demonstrates local construction methods that enable rural transport operators to continue servicing villages like Hangloa. In fact, household questionnaire surveys revealed that 98% of all households surveyed in Southwest and Adamaoua Provinces would provide voluntary labour to improve the road to their village, with the help of an engineer. Community road maintenance in this context can be described as collective action, and is a form of structural social capital (see Box 1.1, Chapter 1 for a definition).

The Mbe - Sassa Mbersi road in Adamaoua, stretching approximately 45km, received a twice weekly transport service, serving over five villages adjacent to the road. Villagers located between Mbe and Sassa Mbersi (Vourgne Mamboum and Nyadou) complained that the service was consistently full by the time it reached them and the only alternative was to walk to Mbe. Villagers in Nyadou organised themselves into groups to hire a tractor for 50,000 FCFA for a period of two days from the Divisional Service for Community Development, to till the farms and transport yams to Mbe and N'gaoundéré.

Bartering was found not to be widely practised in Cameroon where cash transactions have replaced the exchange of material goods. However, discussions revealed that people in Ekondo Beach near the villages of Njima and Ekondo Nene practised bartering with Nigerians across the border. Due in part to the heterogeneity of these villages, there were found to be no discernible social networks or revolving funds in the communities perhaps due to a lack of *trust* that is requisite for social organisation, as highlighted by Coleman (1997).

In terms of livelihood generation, the Sawa people in Southwest Province used natural resources to maximise their income potential. Bavenga is a case in point where 70% of the village's income was derived from cocoa. Cocoa could be sold at a higher price when the cocoa beans had been dried out, and although a natural drying process was preferred, the wet climate required the beans to be dried by means of firewood in clay ovens. This process ensured that the final processed product fetched an optimum price of 400 FCFA per kg at market.

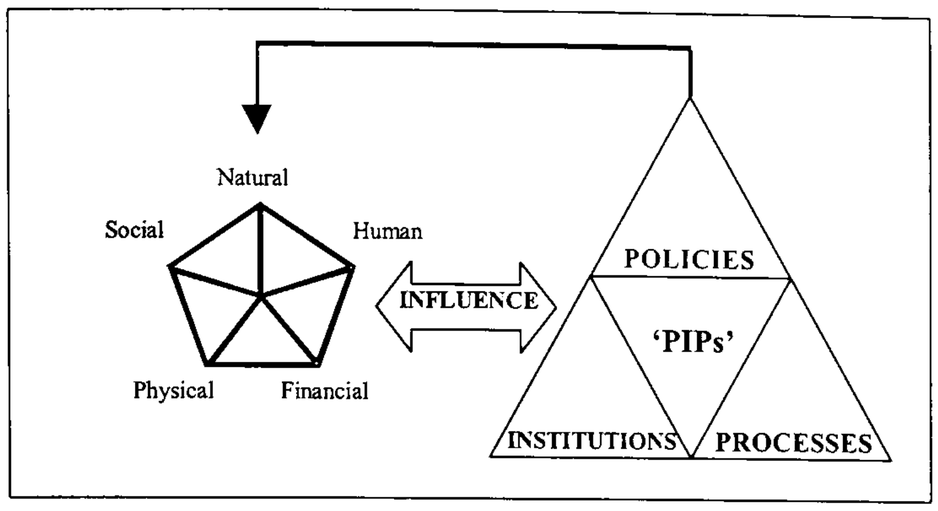
A group of 8 women from Ekondo Nene village described how some women supplemented their household income by selling kerosene and palm gin. These women purchased 25 litres of kerosene from Ekondo Titi 15km away for 5,500 FCFA and sold the kerosene locally for 7,000 FCFA. In addition they were known to buy 15 litres of palm gin from Nyanga 5km away for 14,000 FCFA, and sell the gin in Ekondo Nene for 17,000 FCFA, often making 25% profit.

The following section attempts to analyse the livelihood data acquired from participatory and quantitative surveys in the field.

5.6 Sustainable Livelihoods Analysis

The sustainable livelihoods analysis that follows, draws on the DFID Sustainable Livelihoods Framework (pictured in Figure 2.1 of the Review of Literature, Chapter 2) to examine the primary factors that affect the livelihoods of the rural poor in Southwest and Adamaoua Provinces of Cameroon. Figure 5.6 illustrates the specific areas of the SL Framework that are relevant to the discussion that follows, namely the capital asset pentagon, and the policies, institutions and processes (PIPs) that govern people's access to capital stocks.

Figure 5.6: A section of the UK's Department for International Development's sustainable livelihoods framework



5.6.1 Southwest and Adamaoua provinces compared

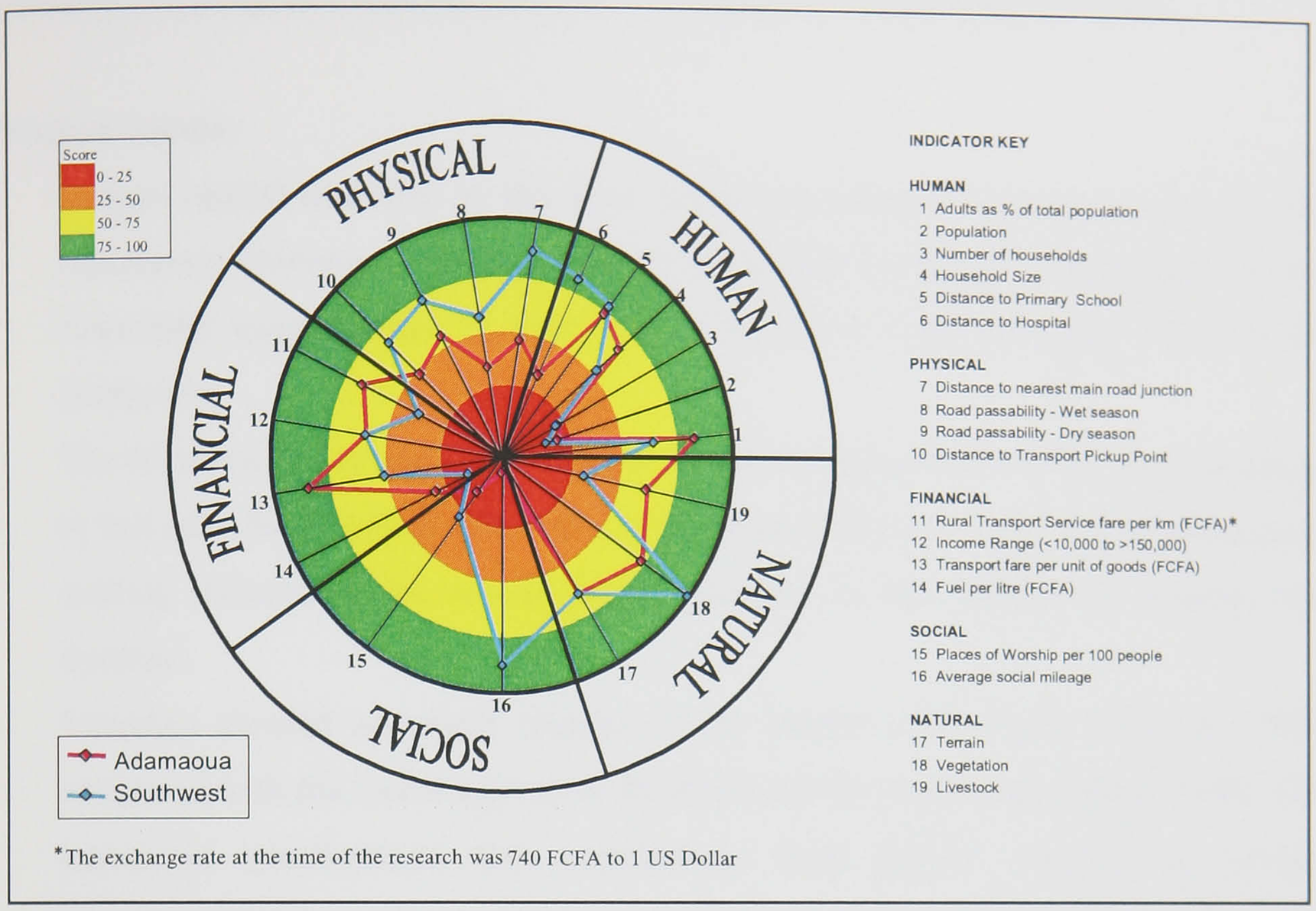
The sustainable livelihoods analysis will provide some interpretation of the Cameroon data, which has been disaggregated into the five key components of the SL Framework. It investigates the relationship between the capital stocks, vulnerabilities, strategies and outcomes of the rural poor under survey, and their interactions with the policies, institutions and processes that govern the operation of support networks, extension and social services available to the rural poor in Cameroon.

Capital Assets

As it stands, the capital asset pentagon pictured in Figure 5.6 is not sufficient for prioritising investment or as a decision making tool because of its subjectivity, as highlighted in Section 4.6.1, Chapter 4 and Section 6.4.2, Chapter 6.

This study investigated the potential for quantifying sustainable livelihood indicators using a scoring system and presenting the data in a Sustainable Livelihoods Indicator Model (SLIM) pictured in Figure 5.7. The SLIM was designed by the candidate as a logical step in the research process, to facilitate livelihoods analysis of measurable indicators that could not be achieved by the subjective analysis undertaken for the Zambia case study. The SLIM was created out of the results of the Cameroon case study and was used to test the quantitative data in Southwest and Adamaoua Provinces as presented in Figure 5.7.

Figure 5.7: Southwest and Adamaoua provinces compared



*The exchange rate at the time of the research was 740 FCFA to 1 US Dollar

Quantitative data from the field survey questionnaires have been applied to the model, which disaggregates livelihood indicators for natural, human, financial, physical and social assets. The purpose was to gain an impression of the livelihood assets and outcomes of the population in Adamaoua and Southwest Provinces. In plotting a score for each indicator, the model is able to more accurately classify the assets of a given location for a given development sector, or indeed from a holistic perspective. The score denotes the relative strength of each indicator, with weak scores plotted in the red circle and strong scores plotted in the green circle.

Qualitative data collection using PA facilitated triangulation of data and complemented the Sustainable Livelihoods Indicator Model (SLIM) by supporting its assertions, as well as identifying the vulnerabilities communities are exposed to, and livelihood strategies employed to alleviate vulnerability and overcome adversity.

The process of developing SLIM and its utility for quantification of capital assets is elaborated at length in Chapter 6. The model is also featured in this section to demonstrate the outcome of livelihoods analysis of Cameroon case study data and to facilitate discussion about the synergies and distinctions between Provinces.

The following list gives an overall description of striking synergies and contrasts found in quantifying capital assets between the Southwest and Adamaoua Provinces.

Human Assets:

- Human capital available to the poor varies considerably between Southwest and Adamaoua Provinces. Average distance to hospital travelled by respondents of the household questionnaire in Adamaoua was 58km, compared with 10km in the Southwest.
- The Ministry of Economy and Finance (1999) revealed that in 1997, the population to bed ratio for hospitals was 1:401 in Southwest Province and 1:727 in Adamaoua, making Adamaoua the second worst province in the country for hospital bed facilities.
- Statistics showed savannah regions of the North to be highly illiterate (70%) compared with the forest regions of the South (30%) (Amin and Dubois, 1999). The household questionnaire data corroborates these figures, showing an average distance to primary school of 16km in Adamaoua and 3.7km in Southwest Province (see Figure 5.5).

Natural Assets:

- Southwest Province has a relatively high rainfall[45] and households surveyed in Fako and Ndian Divisions were located in the watershed of Mount Cameroon. Participants in Bavenga village complained of unclean water containing sediment in the nearest stream 4km away, and a deep water table prohibiting extraction of water using a well.
- In 1996 10% of households in Adamaoua had access to safe water, compared with 52% in Southwest Province (Ministry of Economy and Finance, 1996)
- Land was found to be abundant in Adamaoua, enabling nomadic pastoralists to migrate during the dry season. Land was not restricted, yet field size remained small (for example an average of 1 hectare in Hangloa and 2 hectares in Nyadou) because

[45] Annual rainfall is approximately 2000mm in Southwest Province (Bentley, 2003).

of agricultural input costs and transport required to market the produce. In contrast, average farm size was 4-20 hectares in Vourgne Mamboum, where pastoral farming was practised.

- In Southwest Province, farmers had limited access to land with villages defined by demarcation boundaries. In Njima, a resource mapping exercise and transect walk revealed that land was owned through direct purchase, and landholdings could not be extended beyond the village unless bought from neighbouring villages. Average farm size ranged from 4 hectares in Bavenga to 8 hectares in Njima.

Financial Assets:

- Participants in Bavenga, Southwest Province reported that a few households received pensions or remittances from migrants but the earnings of individual households was private and not recorded as a village asset
- Some communities introduced their own credit facilities, for example the 'Revolutionary Development Meeting' in Ekondo Nene which loaned money with 50 FCFA interest per 1,000 FCFA per month. Similarly, members of 'Njangi'[46] houses in Bavenga borrowed money with 5% commission. NGOs like CHAMEG also provided short term loans of 100,000 FCFA with preferential repayment obligations, with 98% of women reported to make repayments on time.[47] Informal credit relationships such as Njangi can also be considered a social asset
- Average rural transport service fare per km was 32 FCFA in Adamaoua and 60 FCFA in Southwest Province according to the household questionnaire data. Individual transport operators in Adamaoua grouped themselves together to form transport agencies. Fierce competition between agencies had brought fares down between N'gaoundéré and surrounding areas.[48] Agencies of this type were not often found in the Southwest, and where they did exist they tended to target passengers travelling long distances of usually more than 200km, and operated under monopolistic conditions imposing higher fares.[49]
- Figure 5.7 illustrates that financial indicators in rural Adamaoua were strong at the time of the field study, with average transport fares for people and goods transit

[46] Rotating savings and credit activities (ROSCAs) are known as 'njangi' in Anglophone Cameroon, and 'tontine' in Francophone Cameroon (Mayoux, 2001).
[47] Personal communication with Sona Ebenye, Provincial Delegate for the Ministry of Women's Affairs, Southwest Province, September 2000.
[48] Personal communication with Mmamba Dieudonne, Provincial Delegate for the Ministry of Transport, Adamaoua Province, September 2000.
[49] Personal communication with Arthur Lisinge, Provincial Delegate for the Ministry of Transport, Southwest Province, September 2000.

being relatively low. It would seem likely that reduced user fees contribute to improved livelihood outcomes because people were able to afford longer distance and perhaps more dispensable trips.

Physical Assets:

- The most striking contrast with regard to asset endowments between provinces represented in Figure 5.7, are physical indicators. According to the household questionnaire data Southwest Province had better access to the main road junction (average of 6km compared with 25km in Adamaoua), transport pickup point (average of 3km compared with 5km in Adamaoua), and better road passability in both wet and dry seasons.
- Arguably the Priority Network Classification of the Ministry of Public Works exacerbated vulnerability in areas of low agricultural productivity and low population density because it prioritised primary and secondary roads over feeder roads (Génie Civil Magazine, 2000).
- Intermediate Means of Transport (IMT) were active in both provinces but modal choice varied as a result of terrain and physical endowment. Participants in Nkoumbol-Kognoli undertook a ranking of different IMTs and claimed that the ox-cart "is a necessity" and could bring about development because it is multi-functional (as a means of transport and for ploughing fields).
- The push truck was found to be a pervasive IMT, supplied by maintenance and parts shops scattered throughout the Southwest especially (see Plate C7 in Appendix C). Survey respondents indicated that, although more cumbersome, it had a large carrying capacity and was more financially viable (65,000 FCFA) than the bicycle which cost 150,000 FCFA bought new.

Social Assets:

- Social assets of the survey sample were recorded in the model as number of churches per 100 people, and social mileage, in this instance meaning the aggregate distance travelled for social visits (weddings, funerals, friends and relatives), religious purposes, and to the post office or public telephone. SLIM indicates a sharp contrast in social mileage between provinces, and Figure 5.5 verifies this disparity with average trip distances of 5.5km in the Southwest, compared with 47km in Adamaoua (these figures represent aggregate trip distance for social mileage).

- A marked difference in social capital available between provinces was revealed to be outreach contact via radio. The Ministry of Women's Affairs in Southwest Province initiated a weekly radio programme 'Global Voices for Women' that provided advice on legal matters, literacy, family planning, and marketing produce to women who were unable to physically access these predominantly urban services.[50] Unfortunately, the programme was only broadcast as far as Yaoundé and did not extend to the North. Radios were also scarce in poorer villages because of their cost (typically 5-10,000 FCFA per radio and 150 FCFA per battery). However, participants in Bavenga knew of 3-5 women that owned a battery operated radio in the village, and they tended to pass on information on domestic issues to neighbouring households.

The prevailing institutional environment for strengthening these existing assets is discussed next.

5.6.2 Policies, institutions and processes

In their poverty profile of Cameroon, Amin and Dubois (1999) observed that the programme of structural adjustment had improved GDP growth and strengthened macroeconomic balances since the devaluation of the CFA Franc in 1994. The Government of Cameroon issued an official declaration to fight poverty in 1998, yet the extent to which improvements brought about by this strategy have filtered down to the poorest members of society is questionable. Indeed many socio-economic indicators have become worse such as nutrition, school enrolment and HIV prevalence, due in part to the pressure on public expenditure during the economic crisis (Amin and Dubois, 1999).

Local NGOs such as the Southwest Development Authority (SOWEDA) in Southwest Province and Cannal de Development in Adamaoua, have attempted to empower the rural poor. Cannal de Development has helped establish 87 farming co-operatives in Vina Division, and facilitated the provision of credit and loans through banks and credit institutions run through a public private partnership.[51]

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[50] Personal communication with Sona Ebenye, Provincial Delegate for the Ministry of Women's Affairs, Southwest Province, September 2000.
[51] Personal communication with Mr Abou, Cannal de Development, September 2000.

At the time of the study in 2000, the National Agricultural Extension Programme no longer provided agricultural inputs or credit facilities. Instead it offered advice and knowledge while creating links with private input suppliers to facilitate increased productivity.[52] Arable farmers in Bavenga village claimed that chemical pesticides were too costly and inaccessible, with demand exceeding supply and villagers being "duped by sellers."

In Ngaoumbam village, Adamaoua, participatory exercises involving venn diagrams revealed that agricultural technicians visited on a regular basis to teach improved methods of production. However, villagers complained that increased productivity was fruitless without improved transport and storage facilities, and a more localised market.

5.6.3 Vulnerability and livelihood strategies

Table 5.2 summarises key indicators of vulnerability among communities surveyed in Adamaoua and Southwest Provinces, and the strategies they employed to manage risk and overcome adversity.

Table 5.2: Summary of vulnerability and livelihood strategies in Cameroon

Province	Vulnerability Indicators	Livelihood Strategies
Synergies between Southwest & Adamaoua Provinces	▪ Water collection from stream is energy and time consuming ▪ Dilapidated feeder roads cause transporters to withdraw services ▪ Remote transport services are expensive, infrequent and unreliable ▪ Prohibitive distance to health centres causes morbidity and child mortality ▪ Arable farmers cannot increase productivity because poor road condition and lack of transport services prohibits evacuation of produce to market ▪ Ineffective extension services (agriculture, health, veterinary) can perpetuate neglect of livestock.	▪ Rain water collected and stored from roof slopes. Wells placed inside individual properties ▪ Community labour maintains road surfaces and create diversions to support transport operators ▪ A critical mass of 'push trucks' exists as an alternative mode of load carrying transport for the poor, served by spare parts manufacturers and mechanics ▪ Pregnant women and the sick requiring emergency health care are transported by push truck ▪ Headloading and cycling are the only alternatives ▪ Self medication bought from

[52] Personal communication with Abouame Sale, Ministry of Agriculture, September 2000.

		traditional healers and hawkers ▪ Farmers co-operatives collect money to hire tractors during harvest period ▪ Radio services provide information and advice on farming techniques. human and animal health and family planning etc.
Distinctions: Southwest Province	▪ Single women who do not own farm land must diversify their income in order to survive ▪ Cocoa is a principle cash crop but is less profitable without sun drying the beans before their sale.	▪ Women sell palm gin and kerosene for a profit and make more money than farming counterparts ▪ In wet forest regions, local ovens hasten the drying process of cocoa beans and ensure greater economic returns.
Adamaoua Province	▪ Absence of schools in rural villages and lack of classrooms and teachers results in poor education and illiteracy ▪ Absence of health centres. Those that are accessible lack medical staff and drugs ▪ Cattle die during dry season from corridor disease and tsetse fly – vets only visit once a year.	▪ Community construct makeshift schools and voluntary teachers from the community educate children ▪ Community constructed health centre with materials bought collectively – no outside intervention ▪ Permanent surveillance of crops – time consuming ▪ Pastoralists purchase cattle drugs and administer them to the cattle without veterinary supervision.

5.7 Implications for Livelihood Outcomes

5.7.1 Improved accessibility

There have been attempts by both users (transport operators) and providers (Ministry of Public Works) of rural roads in Cameroon to execute small-scale measures in an effort to maximise road passability and reduce the incidence of inaccessibility.

The Ministry of Public Works is in charge of road maintenance and the design, execution and supervision of all public works in Cameroon. In an attempt to provide protection for feeder roads, rain gates have been implemented to reduce the effects of earth road degradation during the rains. The rain gate comprises a simple barrier which

is operated by local communities and is lowered during heavy rains. Its purpose is to prevent vehicles from passing for up to six hours after the rain has stopped, to allow the road surface to recover before being subjected to heavy vehicles (Génie Civil Magazine, 2000).

The rain gates are sometimes neglected with local people disregarding their use by allowing people to pass through the gates during the rains (for a small fee). Consequently, sanctions have been prescribed for owners of 12 seated vehicles weighing more than 3.5 tonnes who cross rain gates within 2-4 hours after it rains (Génie Civil Magazine, 2000). Fines which may be accompanied by withdrawal of driving licences for a period of one year, stand at 250,000 FCFA (Génie Civil Magazine, 2000).

In Southwest Province, some transport operators modified their vehicles to increase passenger and load capacities through alteration of chassis, springs and axles of the vehicle to raise the height of the car, and removed the lid of the boot for extra passenger space (see Plate C8 in Appendix C). Indeed, 25% of five seated vehicles recorded in a traffic count exercise during the surveys were carrying nine passengers, and others carried as many as fifteen passengers.

Results of the participatory exercises, summarised in the livelihoods analysis reinforce the importance of IMTs in providing access between farm and village, and especially between village and the main road junction where transporters operate rural services. Respondents reported that IMTs, and especially bicycles and push trucks proved to be invaluable in bridging the gap between headloading and motorised transport.

In a pairwise ranking exercise (see Figure 3.9, Chapter 3 for a description of pairwise ranking) undertaken to determine IMT modal choice in each village, the bicycle and ox-cart were, in the main, ranked highest because of their durability and load carrying capacity. Ox-carts in particular can "carry the same load as a bicycle and donkey put together!" (pairwise ranking respondent).

For daily travel, headloading was found to be most common. It was acknowledged as being a very inefficient means of transport in terms of load capacity, trip duration and health outcomes. Body strain, backache, chest pain, damage to feet and stunted growth were all cited as particular ailments attributed to headloading. Pushtrucks were

commonplace in all regions of Cameroon because they were cost effective, they carry greater volume and weight than bicycles, and because there was a proliferation of spare parts manufacturers and repairers to service them.

The potential for implementing non-transport interventions as a viable alternative or supplement to road infrastructure and transport service provision is discussed next.

5.7.2 Non-transport interventions

Discussion in this section originates from consultation with various Ministry representatives at central government level in Yaoundé. Information regarding the cost of service provision (including health,[53] education[54] and water[55]) and current programmes of decentralisation that aim to shift decision making responsibilities to the regions was obtained from key informant interviews.

The education sector was undertaking countrywide strategy reforms at the time of the research, the objectives of which were to provide universal basic primary education, decentralise and modernise management of the education system, and advocate good governance. In 2000, free primary education was introduced and the responsibility for individual school budgets was shifted from financial management committees to school boards with community members, under the authority of the Divisional Delegate for Education.

From 2000 teachers were recruited for vacancies in specific geographical areas of their choice in an attempt to reduce teacher absenteeism, and the payment of teachers salaries was also due to be decentralised. Similarly, the co-ordination of examinations was decentralised to facilitate distribution and collection of exam papers. The annual cost of running a school in Cameroon in 2000 (excluding staff salaries) was approximately 50,000 FCFA per child. A classroom cost 8.5 million FCFA in rural areas and 6-7 million FCFA in urban areas, with approximately 6 classrooms required for a primary school, plus a teacher's office, playground, and facilities for water and sanitation.

[53] Personal communication with Martin Monono, Ministry of Public Health, September 2000.
[54] Personal communication with Jean Paul Njoya, Ministry of Education, September 2000.
[55] Personal communication with Hamadou Bouba, Ministry of Mines, Water and Energy, September 2000.

A variety of criteria were used for locating schools. For example, 10km was the standard distance a child was expected to travel to primary or secondary school in Cameroon.

The budget for public health in 2000 was 80 billion FCFA (3% of total government budget) which was used to pay for the health care of 14 million Cameroonians,[56] infrastructure, staff, training, medicines, transport and telecommunications etc. There was no minimum requirement for the catchment of a 'health area' in rural districts, yet there were approximately 5,000 people per health care establishment. The national health budget would have to expand significantly for there to be an increased number of health centres to reduce travel requirements of patients (there were 100 government and missionary health centres serving 1.2 million people in Southwest Province at the time of the survey).

A predicament arises with a non-transport intervention strategy, because health centre and school suppliers and operators will always require road access even if the service users do not! Moreover, a significant rise in number of service outlets would be required in rural areas to fulfil user demand *and* reduce the distance to services and therefore mobility requirements of the rural poor.

The provision of community water supplies in rural settlements helps to reduce the need for daily repetitive travel, but wells and boreholes are costly to install (ranging from 1.5 to 7.8 million FCFA). The Ministry of Mines, Water and Energy had a target in 2000 to provide potable water to 56% of the Cameroon population, with each source of water made available for a minimum population of 250 people. After construction, communities were encouraged to set up a management committee to generate funds for well maintenance. This fund was typically derived from a user fee, either at source or as a monthly fee per household. In 2000, the budget of public expenditure for water was 900,000 million FCFA, with a further contribution by the French Development Corporation and Islamic Bank in excess of 6.9 million FCFA.

The provision of water was high on the development agenda in Cameroon in 2000 and the government's programme for water conveyance was extremely effective. Communities were sensitised to contribute in cash or kind towards well construction,

[56] The population of Cameroon in 2000 was approximately 14 million.

and paying well maintenance. Communities would contribute 200,000 FCFA and materials or labour before work commenced, to instil a sense of ownership among beneficiaries.

Nevertheless, there were still found to be strict criteria for installing wells, correlated with population density:

1. Community had to express their need for a well
2. A well had to be provided to communities of at least 250 people
3. The community had to fund a well maintenance and management committee

On decentralisation, Uphoff (1997, p.11) suggests that "for rural development, it is important to consider the capacity of local institutions, not as an alternative but as a complement to central institutions." Moreover, Bonnal (1998, paragraph 2) explains that "as decentralisation is unfolding, the largely abstract analytical concept of *social capital* may become useful both to rural communities and policy makers in igniting a new drive towards development that values local institutions."

A means of justifying investment in remote areas is by identification of social benefits. Chapter 8 explores how social capital and its associated poverty reduction benefits can be harnessed for advocating transport investment in rural areas.

5.8 Concluding Remarks

Lisinge (2001) noted that the average cost of maintaining a kilometre of earth road in Cameroon was 1.8 million FCFA. This case study has attempted to highlight the investment options of decision makers and ask whether such expenditure can be justified for areas of small population density.

The field research in Cameroon demonstrated that time and money is spent on travel to health clinics, schools, market, water and firewood sources because these services supply large scattered populations. Sufficient capital investment in health and education services to supplement road rehabilitation may negate the need for long distance travel.

In summary, the principle outcomes of the case study are:

- Informal credit facilities (such as njangi and tontine) constitute financial and social capital that provide stocks and flows to mitigate risk and vulnerability
- Non-transport solutions to poverty reduction such as location of social services (health centres, schools, markets and water resources) are valid alternatives to road infrastructure, but still require transport access for service providers
- Decentralisation has the capacity to strengthen policies, institutions and processes particularly at the micro level, as long as there is an enabling environment and sufficient functions (allocation of roles and responsibilities), funds (local budgetary support for different sectors), and functionaries (qualified personnel)[57] among local government authorities.

Perhaps rural transport planning should be implemented with contribution from other service providers. A mechanism for communicating priority requirements of rural communities to transport decision and policy makers would help ensure that appropriate interventions meet the needs of the poor rather than exacerbate their isolation.

The next Chapter reports on development of the Sustainable Livelihoods Indicator Model (SLIM), the principle result of the Cameroon fieldwork, which sampled the case study data.

[57] Personal communication with John Hine, Ethiopian Roads Authority, 8 July 2004.

CHAPTER 6: DEVELOPMENT OF THE SUSTAINABLE LIVELIHOODS INDICATOR MODEL

Research on which this Chapter is based was presented at a workshop with representatives from the Infrastructure and Urban Development Department at DFID on 30 June 2001.

6.1 Introduction

DFID's SL Framework has become a focal point for sectoral development by donors, researchers and practitioners. Four key components of the framework are used as a basis for intervention and investment, with a view to improving the livelihood outcomes of the rural poor (see Section 2.5 for more details):

- Vulnerability context
- Capital asset pentagon
- Policies, institutions and processes
- Livelihood strategies

The creation of the Sustainable Livelihoods Indicator Model (SLIM) is one of the results and outputs from this research, and in particular the Cameroon case study, hence its position in the thesis as a Chapter separating the Cameroon case study in which the model was tested, and the Kenya case study that changes the direction of the research towards social trip-making. The SLIM was born out of a frustration among many transport researchers that SLAs prove difficult to apply in a practical context because they rely on the qualification of livelihood and vulnerability indicators.

While research programmes have taken steps to incorporate the SL Framework,[58] it remains a conceptual tool which has, until now been applied subjectively in livelihoods analysis. Some would argue (Macqueen, 2001) that the SL Framework has limited application for development practitioners and decision makers who find it difficult to operationalise SL concepts.

[58] Including case studies on drought and water security in Ethiopia, road rehabilitation in Mozambique, watershed management in India and decentralisation of livestock services in Indonesia, all featured in DFIDs SL Guidance Sheets (2001b).

This Chapter pursues the potential for quantifying sustainable livelihoods using a scoring and weighting system and presenting the data in a 'rose' model. to supplement the existing 'capital asset pentagon' of the SL Framework. The model disaggregates livelihood indicators for natural, human, financial, physical and social assets of the poor, in order to obtain a measurable livelihood portfolio of a given population.

The Chapter outlines the demand for and application of the Sustainable Livelihoods Indicator Model, created in response to development engineers and economists to quantify sustainable livelihoods using measurable indicators. It then describes the potential applications of the model, and further tests the model on sample livelihood indicators derived from data collected in Cameroon. Existing international indicators of sustainable development are first explored, including the UNDPs Human Development Index, and the Index of Sustainable Economic Welfare.

6.2 Background to Modelling

A model can be defined as a tool for simplifying complex objects and concepts, intended to promote understanding.

Typical uses of conceptual data models are (University of Washington, no date):

- To explore consequences of alternative hypotheses
- To help a researcher clarify ideas about relationships within a system
- To ask how well different hypotheses are supported by data
- To help co-ordinate research teams and design management programmes.

Brown and Harding (2002) define social modelling as the representation of social phenomena and/or the simulation of social processes. They classify social models according to some key characteristics:

▪ Simple	▪ Complex
▪ Small	▪ Large
▪ Qualitative	▪ Quantitative
▪ Static	▪ Dynamic
▪ Deterministic (rule-based)	▪ Stochastic (probabilistic)
▪ Non-behavioural	▪ Behavioural

- Non-spatial (national)
- Spatial (regional)

"'Microsimulation' models are large social models that are typically population based, use large cross-sectional datasets with a comprehensive range of information on households and individuals, and capture in detail the complexity of the systems being modelled" (Brown and Harding, 2002, p.3).

Social models tend to be either deterministic or stochastic in nature. A deterministic model is one which contains no random components, where the results are determined through known relationships among the states and events, and in which a given input will always produce the same output (Brown and Harding, 2002). Stochastic modelling is based on conditional probabilities that certain social conditions or processes will exist or occur (Brown and Harding, 2002).

The Sustainable Livelihoods Indicator Model is intended to be a dynamic model, encompassing behavioural elements, and designed to account for spatial variables. SLIM can be considered a social model that shares characteristics of both deterministic and stochastic models, although it is not a mathematical model, but rather a framework for representing and analysing data in parallel with the existing SL Framework.

The purpose of SLIM is to simplify the complexity of the asset pentagon that continues to confound engineers, particularly from the transport sector. Section 6.3 explores alternative indicators of sustainable development adopted internationally.

6.3 International Indicators of Sustainable Development

Indicators are statistical values that measure development progress and influence policy concerns. They tend to be highly aggregated for whole countries or regions in order to indicate economic, environmental and social performance. Classic indicators include Gross Domestic Product (GDP) and unemployment which are principle measurements of economic growth, increased well being and quality of life. Yet, GDP does not account for income disparities, inequality, environmental pollution or health and is simply a measure of national economic performance. More effective indicators for measuring sustainable developmental progress are described in 6.3.1 and 6.3.2.

6.3.1 The human development index

The Human Development Index (HDI) was devised by the United Nations Development Programme following the first Human Development Report (UNDP, 1990). It introduced a new means of measuring development, by combining indicators of life expectancy, educational attainment and income. The HDI ranks countries by three key indicators (UNDP, 1990):

- Longevity: measured by life expectancy at birth
- Knowledge: measured by adult literacy and combined primary, secondary and tertiary enrolment ratios
- Standard of living: measured by GDP per capita.

The indicators presented in the Human Development Index however, represent national averages and do not reflect inequalities in wealth or resource distribution, and are therefore subject to wide disparities.

The Human Poverty Index (HPI) was introduced following the 1997 Human Development Report (UNDP, 1997), as a means of recognising the poverty of choices and opportunities by addressing all its dimensions rather than simply income. The HPI uses indicators of deprivation: a short life, lack of basic education and lack of access to public and private resources, and applies these to 'headline' indicators already reflected in the Human Development Index. In particular, *standard of living* is measured by three non-income indicators (UNDP, 1997):

1. Percentage of people with access to health services
2. Percentage of people with access to safe water
3. Percentage of malnourished children under five years

The HDI value represents a country's average national achievement in three basic dimensions of human development. These indicators attempt to capture socio-economic definitions of development, and the extent to which a country has made progress towards human development. The HPI values focus directly on the number of people living in deprivation.

While the Human Development Index can be disaggregated to reflect disparities between geographical or administrative regions it remains limited as a policy tool, other

than to broadly contrast the relative socio-economic progress of developing and industrialised nations.

The 2003 Human Development Report (UNDP, 2003) however, includes a revised list of human development indicators that monitors human development by enlarging peoples choices to lead a long and healthy life, to acquire knowledge, to have access to the resources needed for a decent standard of living while preserving it for future generations, protecting personal security, and achieving equality for all women and men. The headline indicators are given in Table 6.1 (UNDP, 2003).

Table 6.1: Human development indicators 2003

- Human and income poverty: developing countries
- Human and income poverty: OECD[59], Central & Eastern Europe and CIS[60]
- Demographic trends
- Commitment to health: access, services and resources
- Leading global health crises and challenges
- Survival: progress and setbacks
- Energy and the environment
- Refugees and armaments
- Status of major international human rights instruments
- Commitment to education: public spending
- Women's political participation
- Literacy and enrolment
- Technology: diffusion and creation
- Economic performance
- Inequality in income or consumption
- The structure of trade
- Flows of aid from DAC[61] member countries
- Flows of aid, private capital and debt
- Priorities in public spending
- Unemployment in OECD countries
- Gender related development index
- Gender empowerment measure
- Gender inequality in education
- Gender inequality in economic activity
- Gender, work burden and time allocation

In addition to these Human Development Indicators, the eight Millennium Development Goals (MDG) comprise the headline indicators for the eighteen targets by which they're

[59] OECD: Organisation for Economic Co-operation and Development
[60] CIS: Commonwealth of Independent States
[61] DAC: Development Assistance Committee

measured (see Section 2.8.2 in Chapter 2, and Section 8.2 in Chapter 8 for further information on the MDGs).

The Index of Sustainable Economic Welfare (ISEW) developed by Daly and Cobb in 1989 is a more comprehensive indicator of well-being that attempts to measure economic activity. The ISEW uses the Atkinson Index to correct for inequality. The basis for this index is a factor 'e' which reflects how concerned society is about equality of distribution of incomes. The ISEW uses e = 0.8 based on UK studies on consumer behaviour (Daly and Cobb, 1989). The index, which substitutes GDP as a measure of economic well-being, makes a deduction for air pollution caused by economic activity, and makes an addition to count unpaid household labour, such as cleaning or child-minding.

The other smaller adjustments in the ISEW are for the costs of commuting, personal pollution control, car accidents, water pollution, noise pollution, loss of habitat and loss of farmlands, and changes to account for net capital growth and net international position (Daly and Cobb, 1989). It also covers areas such as income inequality, other environmental damage, and depletion of environmental assets.

The ISEW has been criticised for its dependence on information that is only available in a limited number of 'Northern' countries (it has been calculated for eight developed countries so far). Also, because the Index is based on assigning economic costs to non-economic impacts such as climate change. It is argued that assumptions made by the Index are too subjective and are based on arbitrary weightings.

ISEW is still an economic measure, and to make these adjustments, economic costs have to be assigned to non-economic impacts such as climate change and ozone depletion. Yet, the Index continues to be criticised for use of 'non-statistical' judgements that diminishes the utility of the ISEW.

6.3.2 UK sustainable development strategy

The UK was one of the first countries to produce a national sustainable development strategy following the Earth Summit in 1992 and subsequent action plan, Agenda 21.

Agenda 21 is a comprehensive plan adopted by organisations of the United Nations, governments, and institutions in every area in which human impacts on the environment (UNESA, 2003). Accepted by 178 nations at the United Nations Conference on Environment and Development (UNCED) in 1992, Agenda 21 calls for the integration of environment and development in order to fulfil basic needs, improve living standards for all, and better manage and protect ecosystems for long-term sustainability (UNESA, 1992).

The UK Government under the Department of the Environment, Transport and the Regions (DETR), continue to advocate a *sustainable development strategy* that identifies priority areas for action and indicators and targets to measure progress. It is used as a framework to guide government policies (DETR, 1999a). The aims of the strategy are fourfold:

1. Social progress which recognises the needs of everyone
2. Effective protection of the environment
3. Prudent use of natural resources
4. Maintenance of high and stable levels of economic growth and employment

Sustainable development objectives are broad, and in order to help identify areas for action, the government devised a set of 15 'headline indicators' and a sub-set of 150 indicators in their sustainable development strategy of 1999. These indicators incorporate natural resources, the environment, societal and economic capital, which together produce an overall 'index of progress' (DETR, 1999b). In monitoring sustainable progress, the government can evaluate areas of the country in terms of poverty, social deprivation and environmental degradation, and in doing so implement policy instruments that will proliferate sustainable development, such as the polluter pays principle[62] and the precautionary principle.[63]

The UK Government have since revised their sustainable development strategy under the Department for Environment, Food and Rural Affairs (DEFRA, 2003). From the outset, indicators to monitor progress were envisaged as an important part of the sustainable development strategy. In the strategy a set of headline indicators was

[62] The polluter or consumer pays for costs incurred by environmental pollution and resource depletion in order to encourage a reduction in polluting activities (Agenda 21, Principle 16).
[63] Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing measures to prevent environmental degradation (Agenda 21, Principle 15).

identified as a quality of life barometer "to provide a high level overview of progress, and be a powerful tool for simplifying and communicating the main messages for the public" (DEFRA, 2003, p.43). Since 1999 a larger indicator set has been used as a model and resource for a considerable number of other indicator initiatives at local, regional, national and international levels, and the UK is considered to be one of the most advanced countries in terms of indicator development (DEFRA, 2004).

The UK continues to play an active role in pursuing sustainable development through the United Nations, notably in its contribution to the World Summit for Sustainable Development (WSSD) in 2002. The UK's sustainable development strategy requires extensive quantitative data for each indicator, derived from medical records, birth rates, mortality and morbidity records, economic and environmental statistics etc. This degree of information is typically not available in most developing countries, therefore researchers and policy makers must obtain their own data or rely on existing statistics which are often under-reported and unreliable.

The next section explores how SLIM was designed and created.

6.4 Application of the Sustainable Livelihoods Indicator Model

6.4.1 Demand for the SLIM model

In order to operationalise sustainable livelihoods concepts, development practitioners have developed a variety of conceptual frameworks to model sustainable development (please refer to the examples of DFID, Oxfam and UNDP in Section 2.5 of the Review of Literature). These frameworks are provided to facilitate understanding of livelihood issues among sociologists and economists, in order to apply a shared approach to poverty reduction.

For engineers who provide infrastructure solutions to poverty reduction, the reality is very different. The concept of sustainable livelihoods is not easy to comprehend for deductive scientists who base their reasoning on quantifiable facts rather than qualitative speculation. Arguably, the Sustainable Livelihoods Frameworks available in the public domain do not necessarily provide the justification for making investment or prioritisation decisions.

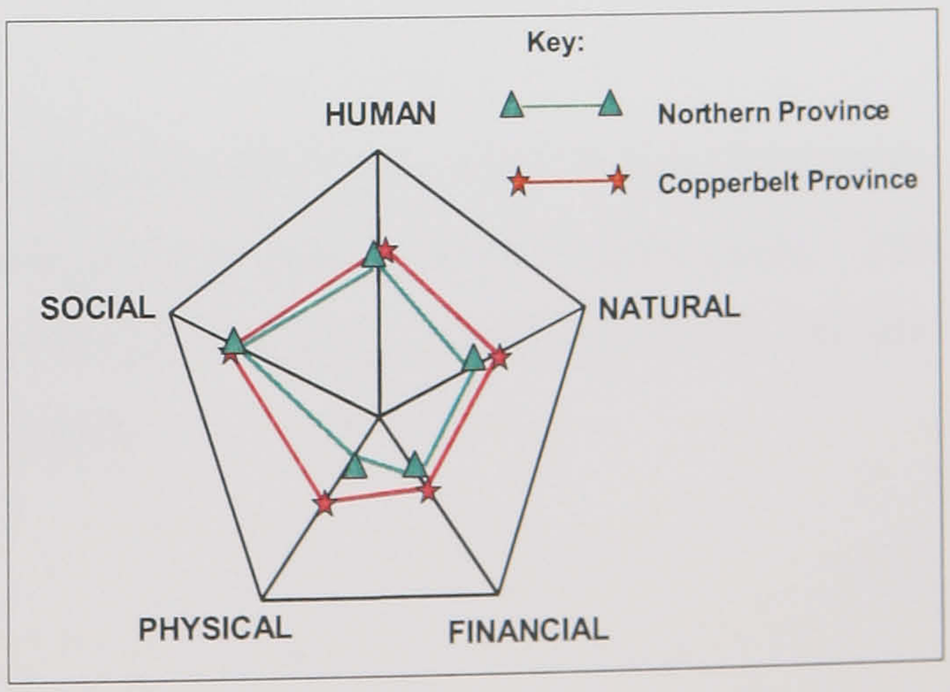
For this reason, the idea of developing a model that attempts to provide such evidence through quantification and measurement of capital assets emerged. The capital asset pentagon proved to be an obvious entry point into quantifying sustainable livelihoods indicators. There is potential for financial, physical, natural, social and human assets to be substituted for one another, and values assigned to them for prioritising investment in transport infrastructure and social services. Engineers could then adopt the same conceptual principles as sociologists and economists, while at the same time making tangible decisions based on quantifiable measures. The next section elaborates on existing methods of analysing capital asset stocks, and incorporates a critique from other development researchers.

6.4.2 Initial applications of the capital asset pentagon

In the Zambia case study (Chapter 4), sustainable livelihoods analysis was conducted to compare the different components of the SL Framework between the areas of study in Northern and Copperbelt Provinces in Zambia. The analysis was principally derived from PA data, and examined more closely the livelihood assets for transport between the two provinces (Figure 6.1).

The asset pentagon in Figure 6.1 has been drawn subjectively based on qualitative data. However it indicates the difference in capital stocks available to the rural poor in Northern and Copperbelt Provinces, and demonstrates where capital assets may be declining.

Figure 6.1: Livelihood assets



As stated in Section 4.6.1, Chapter 4, this diagram requires substantial quantitative evidence to support its assertions. As a stand alone visual tool it simply implies strengths and weaknesses of capital for a particular population (in this instance, the population of a whole province), and makes assumptions from a select

sample of the population. As it stands, the capital asset pentagon is not sufficient for prioritising investment, or as a decision making tool, because its assumptions are insubstantial.

The asset pentagon is not designed to enable direct comparison between assets, but rather to indicate where capital assets are weak so that appropriate action (for example substituting one type of capital for another) can be taken. However, as Macqueen (2001, p.1) explains "without some means for direct comparative measurement between assets, the SL Approach becomes entirely inoperable."

If the Millennium Development Goals are to be achieved, and in particular a global reduction by half of the proportion of people living in extreme poverty by 2015, it is necessary for donor funds to be invested in development projects that maximise the effects of poverty reduction (DFID, 2002b). There is merit in reviewing the social benefits of sectoral investment, particularly in remote areas that do not benefit from high population densities or economic productivity. However, donors traditionally justify investment through quantification and economic returns (please refer to the discussion on cost benefit analysis in Section 2.2.1, Chapter 2).

Without the facility to measure changing access to assets, it is virtually impossible to measure the impact of vulnerability, livelihood strategies and policies, institutions and processes (PIPs) on asset status and vice versa. As Macqueen (2001) observes, an alternative assessment methodology is required, which is quantitative (without being financial) and will be accessible to development practitioners to reinforce the principles presented by existing SL Approaches.

In his paper on 'Measurement Malaise' Macqueen (2001, p.1) of the Natural Resources Institute highlights the need for "direct comparative measurement between assets", and uses a scoring matrix that incorporates a five point ranking system for each of the five assets (there are 25 ranking descriptors in total):

- 0 = Unsustainable
- 5 = Constrained
- 10 = Sustainable
- 15 = Progressive
- 20 = Abundant

The scoring matrix has yet to be tested empirically and has no assigned indicators for these generic stages,[64] but it does allow for comparison between assets by assigning equal scales for each of the five assets, and providing a description for the status of each asset when different scores have been obtained.

The objective of the Sustainable Livelihoods Indicator Model is to advance the utility of the capital asset pentagon by identifying quantifiable livelihood indicators which can be categorised according to human, natural, financial, physical or social capital assets. In plotting a score for individual indicators, the model can more accurately classify the asset endowments of a given location or populace for a given development sector, or indeed from a holistic perspective. It can be used as a comparative tool or simply as a cross-sectional tool for identifying resources available to a single sample.

6.4.3 Development of the SLIM model

The SLIM was designed to improve accessibility of the Sustainable Livelihoods Framework to transport practitioners and engineers, by measuring access to capital assets, to provide a comparable valuation method for prioritising investment. The SLIM approach emphasised assets because this is the widely agreed entry point for projects and policies that are oriented to poverty reduction and long term livelihood sustainability (Ellis, 2000).

The SLIM model can be used as a decision making tool drawing on information derived from both quantitative baseline surveys and participatory community consultations. Qualitative data collection using Participatory Appraisal techniques should complement indicators displayed in the model by identifying the vulnerabilities communities are exposed to, as well as the livelihood strategies employed to reduce vulnerability.

The SLIM tool has three principle applications:

1. Comparative tool
2. Prioritisation tool
3. Monitoring and evaluation tool

[64] Personal communication with Duncan Macqueen, September 2001.

The extent to which SLIM can be applied in different contexts is demonstrated in Table 6.2. The model can provide the basis for agreement among decision makers in a visual form, capturing disaggregated data, and highlighting areas that require primary attention.

Table 6.2: Practical application of sustainable livelihoods indicator model

Function	Applicability of SLIM Tool
Comparative Tool	▪ Compare the degree to which livelihood indicators in a given location are sustainable: i.e. identify social, human, physical, natural and financial capital assets within a specific community ▪ Compare the impact of different interventions on a set of livelihood indicators. Which intervention is deemed most effective? Which indicators will it have most measurable impact on? ▪ Identify livelihood assets for transport i.e. access to and attendance at health clinics and schools (primary and secondary). How can access (facilitated by transport) strengthen other capital assets i.e. income generating potential etc. ▪ Compare assets available and potential livelihood outcomes of low, middle and high income groups.
Prioritisation Tool	▪ Prioritise investment in a particular location for a particular sector i.e. physical capital shown to be weakest, with road structures e.g. bridges, requiring investment most urgently. Effectively allocates limited resources to areas of most pressing concern ▪ Prioritise investment between communities – rural/urban. Identify weak indicators of sustainable livelihoods and allocate funding/interventions accordingly ▪ Compare villages/towns/districts/provinces as the basis for receipt of government or donor funding ▪ Social Funds: SL model used to prioritise social fund investment for community applications i.e. evaluate the need for intervention.

Monitoring and Evaluation Tool	▪ Monitor and evaluate the effectiveness of interventions. and their impact on other capital assets i.e. does maintenance of earth roads impact positively on physical, as well as other assets? ▪ Monitor negative and positive impacts of (transport) interventions on different capital stocks. Can use cross-sectional data or longitudinal data to monitor impact over time i.e. Lifecycle of a road ▪ Review assets available to a community pre- and post-intervention for 'before and after' impact studies. 'Do nothing' scenarios – what are the benefits/disbenefits of no intervention? ▪ Explore increasing or declining assets in a given location over time – i.e. Over a 10 year period ▪ Forecasting tool to establish future trends and identify budgetary requirements.

The SLIM approach is simply another means of interpreting quantitative data within the parameters of the SL Framework. Through careful scoring and weighting of indicators, the outcomes of comparative analysis using SLIM can support investment decisions. At the very least, the SLIM approach can be used as a checklist or screening instrument to highlight where capital assets are declining to unsustainable levels, or conversely where assets are strong and the need for intervention therefore reduced.

6.5 The Sustainable Livelihoods Indicator Model in Practice

The Sustainable Livelihoods Indicator Model was conceptualised and designed by the candidate and created with technical assistance from a TRL research colleague to calculate the scores and weightings for the range of values within each capital asset drawn from the Cameroon data. The candidate began by adapting the questionnaire data into measurable livelihoods indicators, categorised into the five capital assets listed overleaf, after which a range of values was allocated to each indicator and a consistent scoring mechanism calculated in Microsoft Excel and plotted onto a polar chart (see Section 6.6).

Sustainable Livelihoods Approaches typically adopt five different capital assets. Listed below are examples of how these assets can be measured:

- *Human*, e.g. a measure of mortality, morbidity, literacy (accessibility to hospitals and schools) or number of meals per person per day, and distance to nearest primary school
- *Physical*, e.g. passability of roads or paths
- *Financial*, e.g. an income oriented measure of livelihood including the potential for earning a living, acquisition of credit, sources of investment, savings, remittances and pensions, also rural transport service fare per kilometre
- *Social*, e.g. access to social destinations such as places of worship, friends, family, community associations, leisure facilities, social groups
- *Natural*, e.g. the type of terrain in which the community is situated, flat and mountainous being the two extremes.

The sustainable livelihoods schematic, derived largely from the work of the Institute of Developmental Studies and in particular Scoones (1998), represents these assets in the form of a pentagon. The spreadsheet used in SLIM assigns a score from 0 to 100 for each of the various indicators of the five assets and plots them on a circular graph divided into five equally spaced segments (Figure 6.2). At one extreme, a score of 0 for a given indicator shows its total weakness, while a score of 100 indicates maximum strength. The plot is divided into four concentric zones:

- Red for scores of 0 to 25
- Orange for scores of 25 to 50
- Yellow for scores of 50 to 75
- Green for scores of 75 to 100.

6.6 Application of the Cameroon Data

The indicators adopted in the SLIM approach, and used in Figure 6.2, are samples based on quantitative data from surveys carried out in Cameroon.

The example of the model presented here shows nineteen indicators (Table 6.3) for two villages in Southwest and Adamaoua Provinces, Cameroon:

- *Bargarmi* village in Ngoundere District, Adamaoua Province

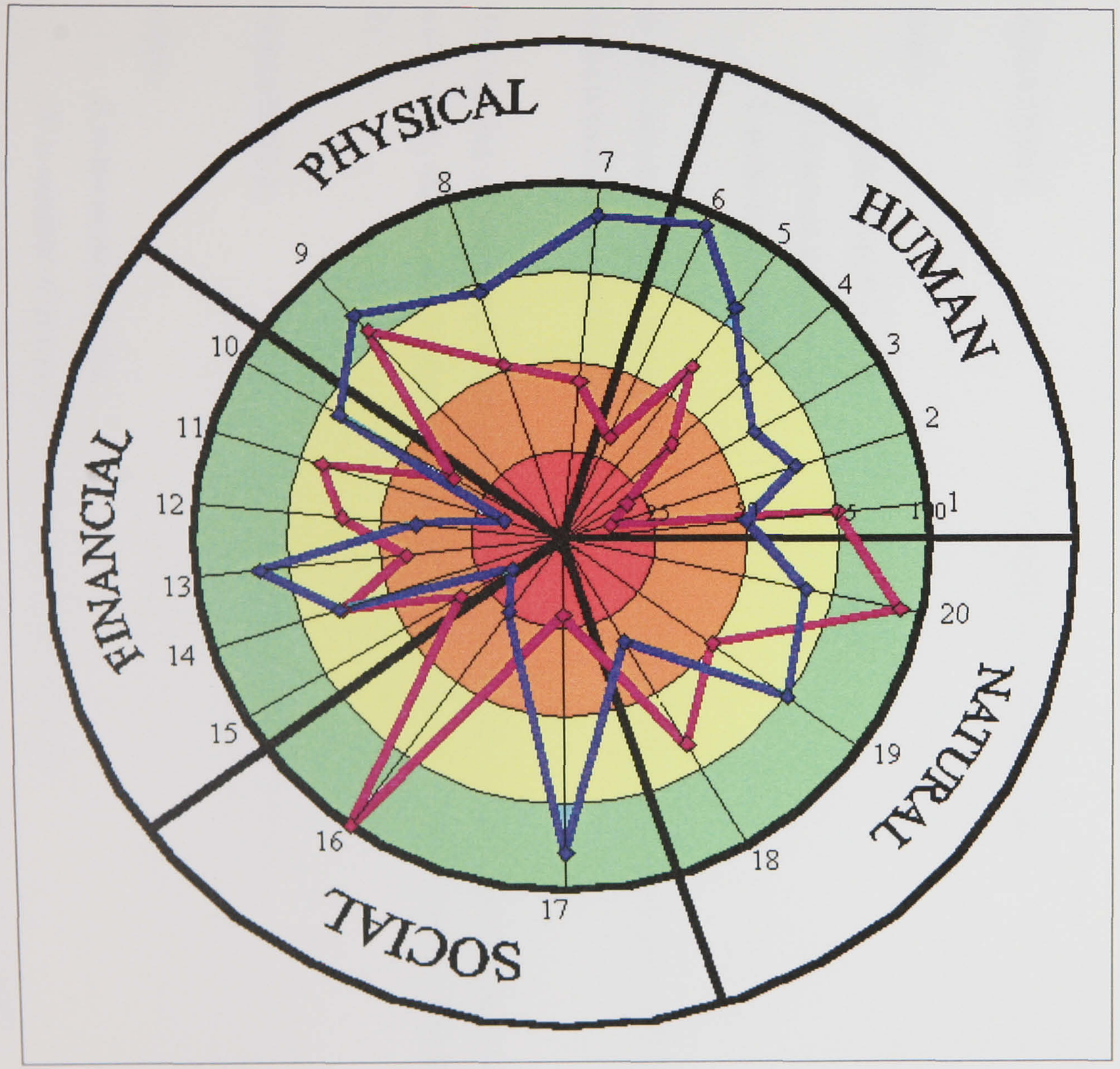
- *Boteva* village in Buea District, Southwest Province.

Table 6.3: Sample indicators

Type of capital Asset	Indicator	Range of values	
		Minimum Score 0	**Maximum Score 100**
HUMAN	Adults as % of total population	0%	100%
	Population	0	Greater than, or equal to, 300[a]
	Number of households	0	Greater than, or equal to, 50[a]
	Household size	0	Greater than, or equal to, 10[a]
	Distance to Primary School	Greater than, or equal to, 10km[a]	0km
	Distance to Hospital	Greater than, or equal to, 80km[a]	0km
PHYSICAL	Distance to transport pickup point	Greater than, or equal to, 45km[a]	0km
	Road Passability in Wet season (subjective scale)	4 - Never passable	1 - Always passable
	Road Passability in Dry season (subjective scale)	4 - Never passable	1 - Always passable
FINANCIAL	RTS Fare per km	Greater than, or equal to, 50 CFA Francs per km[a]	0 CFA Francs per km
	Commodity Prices (maize)	Greater than, or equal to, 150 CFA Francs per kg[a]	0 CFA Francs per kg
	Income Range (<10,000- >150,000)	0%	100%
	Transport fare per unit of goods (CFA)	Greater than, or equal to, 2,000 CFA Francs per unit[a]	0 CFA Francs per unit
	Employing non-household labour	0%	100%
	Cost of fuel per litre (FCFA)	Greater than, or equal to, 600 CFA Francs per litre[a]	0 CFA Francs per litre
SOCIAL	Places of worship per 100 people	0	Greater than, or equal to, 2[a]
	Average social trip distance	Greater than, or equal to, 50 km[a]	0km[a]
NATURAL	Terrain (subjective scale): Flat - 1 Rolling - 2 Hilly - 3 Mountainous - 4	4 – Mountainous	1 - Flat
	Vegetation (subjective scale): Dambo - 1 (score 25) Open - 2 (score 100) Forested - 3 (score 75) Grassland - 4 (score 50) Semi-arid - 5 (score 0)	Semi arid – 0	Open - 100
	No. Livestock (Cattle, Pigs, Sheep, Poultry)	0	Greater than, or equal to, 200 livestock[a]

[a] *Arbitrary values*

Figure 6.2: Comparison between two villages in Cameroon (2000)



INDICATOR KEY

HUMAN
1 Adults as % of total population
2 Population
3 Number of households
4 Household size
5 Distance to primary school
6 Distance to hospital

PHYSICAL
7 Distance to transport pickup point
8 Road passability – wet season
9 Road passability – dry season

FINANCIAL
10 RTS fare per km (FCFA)
11 Commodity prices (FCFA per 100Kg)
12 Income range (<10,000 to >150,000)
13 Transport fare per unit of goods (FCFA)
14 Employing non-household labour
15 Fuel per litre (FCFA)

SOCIAL
16 Places of Worship per 100 people
17 Average social trip distance (km)

NATURAL
18 Terrain
19 Vegetation
20 Livestock

Bargarmi
Boteva

6.6.1 How scores are calculated

The calculation of an indicator score from data which is presented as a percentage, e.g. the number of adults as a percentage of the total population, is straightforward. In this case a population with 75% adults is given a score of 75.

Where data are presented as absolute values, such as the distance of the village centre from the nearest point where motorised transport is available, or the number of churches to a given number of the population, an absolute upper limit must be defined.

If the pickup point for motorised transport is located within the village, a score of 100 is given. If on the other hand, the distance between the village and the pickup point is equal to, or greater than the given maximum, the score is 0. The principle of score calculation is shown in Equation 1.

EQUATION 1 $S = IF\{D>L,0,100*[1-(D/L)]\}$

where:

S is the score 0 to 100,

D is actual distance, and

L is the limiting value

In this case an arbitrary limit of 45km has been chosen, based on information provided in the household questionnaire.

The number of places of worship per 100 people can be regarded as a positive social asset. Here, the inverse of the principle shown in equation 1 can be applied (Equation 2).

EQUATION 2 $S = IF\{W>L,100,[(W*100)/L]\}$

where:

S is the score 0 to 100,

W is number of places of worship per 100 people, and

L is the limiting value (an arbitrary limit of 2 has been chosen in this case)

Scores for the two natural indicators, terrain and vegetation, use a subjective scale. For example, flat, rolling, hilly, mountainous for terrain. Of the different vegetation cover types 'open' ground has been given the highest score, having more agricultural potential. Forested ground has been assigned a score of 75, being a valuable source of essential firewood. Grassland has been assigned a score of 50 being deemed to have less agricultural potential than open ground. Dambo[65] may be a good source of (not very clean) water and a rich source of wildlife and possibly fish, but associated streams very often hinder access. This has therefore been assigned a score of 25. Semi-arid land has been assigned a score of zero, being likely to have little or no agricultural use.

The diagram demonstrates the applicability of SLIM and its use as a visual, comparative tool. The basic premise of the approach is that the higher the score of each indicator (the further away from the centre point of the diagram a plot lies), the more sustainable the attributes that the indicators represent.

Figure 6.2 shows a striking difference between asset stocks of the two villages under survey. In particular, the chart reveals that average social trip distance (encompassing number of trips per year to church, friends/relatives, post office and public telephone) is high in Boteva, and low in Bargarmi. Yet, the converse is true for the average number of places of worship per 100 people. This is a very interesting finding because Bargarmi is in Adamaoua Province which is predominantly Muslim and therefore mosque attendance is much higher (at least once a day) than church attendance (weekly) in the Southwest which is predominantly Christian. Similarly, social activities are less conspicuous in Adamaoua.

6.7 Concluding Remarks

The SLIM approach is not designed to operate independently of the rest of the SL Framework. SLIM is intended for application in much the same way as the capital asset pentagon - influencing other components of the framework and vice versa. In addition to the strengths and weaknesses of the assets, comparative analysis would incorporate the influence of policies, institutions and processes, and of vulnerability and risk management strategies on livelihood outcomes.

[65] Dambo is marshland prone to flooding.

There is perhaps merit in applying the SLIM approach to complement conventional livelihoods analysis, and particularly in prioritising investment for achieving the Millennium Development Goals. However, use of such a tool should possibly not take place in isolation of the communities for which prioritisation of investment is targeted. Community consultation is paramount for effective allocation of investment.

In using SLIM or a similar appraisal model (for example Macqueen's 'Malaise' model), community stakeholders, and in particular vulnerable groups (chronic poor, elderly, young, women and physically impaired) should participate in any decision-making that results from use of the tool. Beneficiaries of development projects and programmes should themselves define the indicators used in such an appraisal, and of the scores used to measure the indicators.

The SLIM and 'Malaise' models have much to learn from one another. On the one hand, SLIM uses a complex scoring system where the indicators are not always directly comparable. On the other, the 'Malaise' model (Macqueen, 2001) provides a consistent range of scores that will allocate one of 25 generic descriptions to each indicator applied to the model.

Both SLIM and the 'Malaise' models are examples of a practical development tool, and certainly there will be scope for an amalgamation of the two models following further research by the Natural Resources Institute and TRL. However, for the purposes of this research and due to the focus on social capital, use of the tool may obstruct the dialogue between development practitioners on issues of sustainable livelihoods, social capital and accessibility that is being sought in this thesis. The model is at risk of simplifying social capital concepts to such an extent that makes them meaningless.

Indeed, Brown and Harding (2002, p.23) recognise that measuring economic and social benefits is "not just about the dollars." Policy decisions are necessarily going to involve value judgements. The aim is for social modelling to contribute to a more rational analysis and informed debate which leads to the implementation of equitable public policies. Consequently, this conclusion does not mark the end of this enquiry into measuring sustainable livelihood indicators. Rather, it will be pursued in a professional capacity in partnership with other researchers and institutions supportive of quantification for the benefit of engineers in transport and other sectors.

There are seemingly few development practitioners who support the quantification of livelihood indicators (notably Macqueen and Ellis). Certainly major bilateral agencies and NGOs (notably DFID, CARE and Oxfam) have provided little in the way of livelihoods quantification, despite acknowledging that the SL Framework is "too abstract for field level staff" (Carney *et al*, 1999). Indeed, because the client for the research (DFID) was not receptive to the concept of SLIM at its conception, SLIM proved difficult to pursue operationally and was a contributory factor in suspending further development of the model. For this reason the model was only tested on the Cameroon data and not applied to the Zambia data *post hoc* because there were insufficient resources to do so and it did not have the clients support.

SLIM constitutes a particular avenue of research, however since its inception, the evolving development debate has begun to lean heavily towards the significance of social capital, and hence this line of enquiry is being pursued for the thesis beginning with a case study of Kenya in Chapter 7.

CHAPTER 7: KENYA CASE STUDY FINDINGS

7.1 Introduction

The investigation into the transport constraints of the poor, and application of Sustainable Livelihoods Approaches in Zambia and Cameroon, led to a period of reflection about notions of vulnerability and measurement of capital assets, which are discussed in Chapter 6. Research on which this Chapter is based was carried out in October 2002. Since these case studies were undertaken, the research objectives of the thesis have evolved, with an emphasis on social capital and the effects of accessibility on social trip-making and maintenance of social capital networks. As described in the Methodology (Chapter 3), an opportunity arose to collaborate with an international transport development organisation based in Kenya, to pursue the role of transport in social capital development.

The Rural Transport Services Project for Kenya (RTS) was initiated by the Kenya Network for Draught Animal Technology (KENDAT) in 2001. The objective of the study was to systematically assemble data, information and experience. These can provide key policy options for improved delivery of rural transport services which improve livelihood systems of poor men and women at national and local levels.[66]

Sustainable Livelihoods Approaches are an important underpin to the RTS project. Livelihoods analysis is being employed at the micro level to capture the inter-relationships between transport and development of livelihood assets, and at the macro level, to identify how the existing policy environment influences mobility and access issues.

The RTS project provided an opportunity to investigate the role that transport plays in providing access to and maintenance of social networks. The empirical research undertaken in Kenya demonstrates how accessibility constraints can be a precursor to vulnerability, and the way in which social capital can help people deflect shocks and stresses associated with vulnerability. This case study supports the assertion that

[66] Personal communication with Pascal Kaumbutho, KENDAT, October 2002.

transport is one agency by which social capital networks can be sustained, and gives weight to the argument for accessibility based interventions in low density areas.

In their *Guidance notes on the application of sustainable livelihood concepts*, KENDAT asserts that access to social networks and political processes are important in creating opportunities for learning, exchange of information and a means of influencing development priorities. A transport system should help in addressing the dimensions of poverty that is related to social exclusion (KENDAT, 2001).

This Chapter reports on the field research undertaken on behalf of KENDAT to develop a framework for analysing how communities create and expand their social capital and the role that transport plays in it.

7.2 Background

Kenya, considered to be well placed as an engine of growth in East Africa has a population of 32 million,[67] and covers an area of 582,650km^2 (CIA World Factbook, 2004c). Fifty two percent of Kenyans are defined as absolute poor (unable to meet their basic needs, such as food and shelter), with 75% of the poor living in rural areas (GoK, 1997).

Kenya's economy has been stagnating because of poor management and uneven commitment to reform. In 1993, the Government of Kenya implemented a programme of economic liberalisation and reform that included the removal of import licensing, price controls and foreign exchange controls. The reforms led to a brief turnaround in economic performance following a period of negative growth in the early 1990s. Kenya's GDP contracted to 0.2% in 2000 and has since risen to 1.7% in 2003 (CIA World Factbook, 2004c).

The Kenyan PRSP[68] outlines measures aimed at restoring economic growth and poverty reduction by focusing on (GoK, 2001):

- Facilitating sustained and rapid economic growth
- Improving governance and security

[67] The CIA World Factbook (2004c) for Kenya records a total population of 32,021,856.
[68] A revised PRSP for 2004 to 2007 was approved in May 2004 (GoK, 2004).

- Increasing the ability of the poor to raise their income levels
- Improving the quality of life of the poor
- Improving equity and participation.

The PRSP is an instrument for implementing key national development policies, such as the National Poverty Eradication Plan (NPEP), and the National Development Plan. The NPEP proposes a fifteen year time horizon (to 2016) to fight poverty through the adoption of the Millennium Development Goals, while the development plan stipulates policies of a broader nature to be implemented over the medium term (GoK, 2001).

The sector priorities of the 2001 PRSP ranked physical infrastructure third, after human resource development. Agriculture and the rural development sector were ranked as highest national priority. The PRSP recognises that the provision of quality infrastructure is essential if the poverty reduction and economic growth targets are to be met. The focus of the PRSP is the maintenance, rehabilitation and reconstruction of existing facilities. For roads, it is estimated that 43% of classified roads are in poor condition and require rehabilitation (GoK, 2001). Rural access roads, which fall under local authorities are unclassified and have also continued to deteriorate due to lack of funding.

Focus of the Rural Transport Services Project is on means of transport, in particular the role of local transport systems such as IMTs that are abundant in many parts of Kenya.

The interaction between transport mobility and maintenance of social capital networks for the case study was investigated in four rural areas of Kenya:

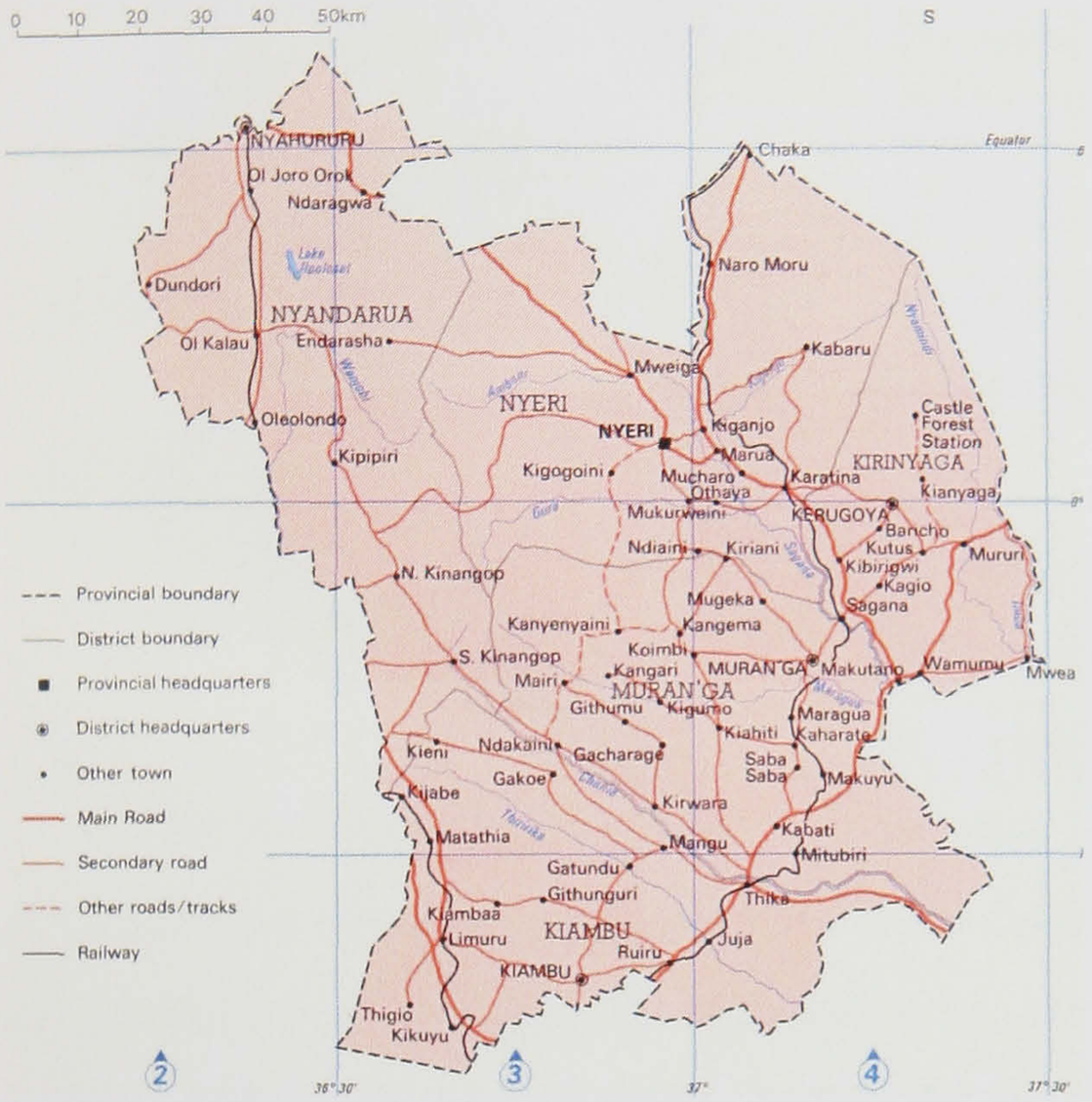
- Lari Division in Limuru District (Central Province)
- Mwea Division in Kirinyaga District (Central Province)
- Kalama Division in Machakos District (Eastern Province)
- Magadi Division in Kajiado District (Rift Valley Province).

The following information on the survey divisions was acquired from the RTS project background reports supplied by KENDAT.

Lari Division covers a land area of 564.7km^2, with a population of 123,391. It is characterised by high levels of agricultural output and close proximity to markets, in particular Nairobi. The density of demand for transport in Lari results in a diversity of

means of transport, especially donkey-based IMTs. There is good interface between walking, IMTs and motor vehicles, including trucks that ferry vegetables 500km to Mombasa on the East Coast. A situational analysis of Lari Division, using Geographic Information Systems (GIS) revealed that the roads here, which are generally impassable during the rainy season, have a very rugged and unreliable terrain because they are traversed by faulting and folding land masses (Kennenni, 2002).

Figure 7.1: Map of Central Province



Source: Collins-Longman (2002)

Kalama Division in the Eastern Province (pictured right) has the lowest population density of the three study areas (130 persons per km^2). Marginal crop production and agro-pastoralism contributes to a low agricultural output in the division, enforced by distant markets and an extremely poor transport infrastructure. Motorisation is lower than in other Divisions, and there exists a poor diversity of IMTs for personal and subsistence use, with animal traction being used mainly for tillage rather than transport. Consequently, walking is common over long distances, and transport service operations are few.

Figure 7.2: Map of Eastern Province

Source: Collins-Longman (2002)

Figure 7.3: Map of Rift Valley Province

Source: Collins-Longman (2002)

Magadi Division in the Rift Valley (pictured left) has a population of 28,244 (of which 86% are rural) in a total area of 2,749km^2. It is characterised by a pastoral community whose development has been strongly influenced by a large factory (Magadi Soda) at one end and a rich horticultural farming settlement at the other end. The area is otherwise remote except for some tourist centres, and is characterised by agro-pastoralism activities, low population density and long distances to social services.

Agriculture, the sector that Kenya depends on most in terms of food and employment (75% of the population are employed in the sector), and that contributes over 19% of GDP plays a critical role in poverty reduction (CIA World Factbook, 2004c). The agricultural sector uses transport to facilitate the evacuation of produce to market and cash crops for export. Indeed, the second report on Poverty in Kenya (GoK, 2000, p.45) reports that the "declining trend in macroeconomic indicators, was as a result of adverse weather conditions, rising input costs, high domestic interest rates, power shortages, and *dilapidated physical infrastructure* which combined to worsen the poverty situation in Kenya."

While Kenya has developed a plan that addresses the most serious aspects of poverty, these do not specifically include the rehabilitation of physical (transport) infrastructure. Rather, the challenge for government is to implement poverty action programmes, with an emphasis on the following (GoK, 2000):

- Primary redistribution: enabling poor households to produce and earn more, in order for them to sustain themselves rather than being dependent on relief
- Secondary redistribution: providing basic health services, safe water, nutrition, education, and extension services to poor households to raise their present and future productive capabilities

- Tertiary redistribution: building and reinforcing safety nets of cash or kind (i.e. food) to alleviate consumption shortfall due to unpredictable shocks such as droughts, flood, war, crop failure etc
- Enacting an organised social protection fund to protect Kenyans from cases of starvation.

The extent to which Kenya's transport infrastructure and services feature in this programme of implementation is not clear. Nevertheless. KENDATs RTS project aims to provide a better understanding of the relationship between low cost. intermediate means of transport and sustainable livelihoods. The project outcomes are anticipated to lead to a reduction in absolute poverty.

7.3 Social Capital: Kenyan Definitions

In referring to social capital in this paper, its definition is acknowledged as the social resources upon which people draw in pursuit of livelihoods, divided into two 'types'. 'Cognitive' social capital includes relationships of trust and confidence, along with perceptions of family and rural home. 'Structural' social capital includes networks, membership of groups, access to wider institutions of society, rural-urban linkages and extended family contacts (see Box 1.1, Chapter 1).

Gugerty and Kremer (1999) provide one of the few papers reviewing social capital formation in Kenya. The paper addresses whether and how development funding affects social capital by examining the impact of development projects on social capital formation among rural women's groups and primary schools in Western Kenya. In brief, the paper finds that outside funding has relatively weak effects on the type of indicators usually thought of as social capital. It reports that, in women's groups, funding strengthens the group's ties to the community, but has ambiguous effects on the internal solidarity of the groups. Groups that receive funding also report a much larger number of visits from outside groups and have more contact with community members. In primary schools, funding appears to strengthen internal solidarity and motivation but has a negligible impact on external linkages to government, NGOs or the education administration (Gugerty and Kremer, 1999).

The focus of Gugerty and Kremer's empirical example is of the 'horizontal' and 'vertical' networks formed by women's groups and in primary schools, and of the social capital within each, reinforced by development projects and external funding.

In his insight into the PRSP process, Sisule (2001) explicitly alludes to the need to develop social capital among communities, in order to influence resource allocation in Kenya. Sisule asserts that deliberate efforts should be made to organise and empower people to have a say in decisions on resources allocation and use. Participation, implementation and monitoring of poverty reduction strategies can be achieved at the micro level (community), meso level (district) and macro level (national).

Sisule (2001) continues by reporting that government policies have in some cases failed due to the lack of an effective institutional framework that allows wider participation of stakeholders. The strategies designed in such processes are consequently rejected by key stakeholders and disowned by development agents. A case in point is the District Focus for Rural Development (DFRD) strategy and District Development Committees (DDC). These have proved unsuccessful because they do not have wide representation, and government officials wield disproportionate power at the cost of inclusive decision making (Sisule, 2001).

The research methods for the Kenyan field study have been described in the Methodology (Chapter 3). The analysis of data displayed in this Chapter is based on averages per household sampled. The interviews with survey respondents (see Boxes 7.1 to 7.5) were undertaken by the researcher, with the use of a translator where necessary.[69] The following sections describe the characteristics of social capital networks, trip-making and mobility in Kenya, and provide justification for linking social mobility and transport sector policy.

7.4 Characteristics of Social Networks

In exploring access to social capital networks in this study, both 'cognitive' and 'structural' types of social capital were identified, with a particular emphasis on the latter. Structural types of social capital in Kenya take the form of revolving funds.

[69] The names have been changed to protect the respondents' identity.

commonly known as 'merry-go-round's', 'harambee's'[70] (a social group that raises funds for particular events such as school fees, weddings and to support families during illness), and 'jua-kali'. A jua-kali describes an informal association or business that promotes appropriate technology, ranging from training in cake baking and weaving, to repair garages for intermediate means of transport.

Social capital networks feature prominently in the survey sites, and are characteristic of rural areas in which the majority of people take part in agricultural (pastoral and arable) production. The cognitive networks identified during the field surveys are those that do not stem from any financial incentive that will result in capital gains. They are the product of social relations in which people invest time and money, often with limited returns, and can be referred to as coping mechanisms. The maintenance of links between friends, relatives and neighbours is undertaken as a form of risk management. While there may be no immediate or long-term gains, the formation of cognitive networks ensures the availability of a sustainable 'safety net' that can be deployed during periods of adversity (illustrated in Box 7.1).

Box 7.1: Joseph Njenga

Joseph Njenga, a teacher living in Ngurubani, Mwea owns a bicycle, wheelbarrow and ox-cart, but currently has no oxen due to lack of funds. Joseph can borrow oxen from friends to use when transporting manure and water, and has an arrangement with a neighbouring farmer who owns oxen but no cart. While Joseph no longer belongs to any farmers groups, this reciprocal arrangement has strengthened his relations with neighbouring farmers who inform each other of the current market price for vegetables, and lend each other produce when capital is needed quickly. Joseph recently lent a farmer 10kg of French beans which he could sell to pay his children's school fees. While the farmers group has disbanded, the farmers remain on good terms, which further strengthens the support network.

The type of social capital described in Box 7.1 is defined as 'reactive'[71] by Frankenberger and Garrett (1999) who explain that members in a community solidarity group will try to help each other prevent the occurrence of a food or income shortfall by

[70] Kenya's first President (Jomo Kenyatta, 1964-1978) promoted a policy of self-help or voluntary action in the form of a 'harambee' (Swahili for 'let us pull together') and ended all of his speeches exclaiming "Harambee! Harambee! Harambee!" (Widner and Mundt, 1998).

[71] 'Reactive' is defined here as the community's reaction to shocks and stresses by providing financial or material assistance to the poor who have no capital assets to substitute – see Section 2.6 of the Review of Literature (Chapter 2) for further information.

sharing key factors of production. In this instance the shared factors are means of transport (oxen and cart) and agricultural production (French beans).

Structural networks range in size and influence, from farmers groups aiming to increase their productivity through acquisition of a plough, to entrepreneurial self-help groups that generate income by providing a community service (see Box 7.4). Coleman (1997, p.84) discusses the value of trustworthiness that is implicit in these rotating credit associations: "For a person who receives a payout early in the sequence of meetings could abscond and leave the others with a loss." He indicates that revolving funds are more likely to operate successfully in rural areas that typically constitute a more homogeneous society, than among urban communities, characterised by a high degree of social disorganisation.

However, in a paper discussing grass-roots group development activities and associated concepts of social capital in Ghana, Porter and Lyon (2003, p.11) found that there was strong attachment to community groups by government and NGOs in the Gomoa District despite the "negative attitude of villagers to group formation for development projects".

Structural networks are also considered to be 'reactive', according to Frankenberger and Garrett (1999). Merry-go-rounds are formed to generate revolving funds for their members, and are used for unpredictable medical and funeral costs. The case given in Box 7.2 demonstrates the way in which networks compensate members experiencing income shortfalls.

Box 7.2: David Kimanthi

David Kimanthi is a farmer and hotel manager in Sokomjinga, Lari Division. David belongs to a self-help group called HATO, formed to take responsibility for donkeys, and to register them as transporters with the government. Each member contributes 100 kshs[72] as an administration fee to the group. David is currently receiving artisanal training from KENDAT so that he can impart information to other HATO members. KENDAT have taught HATO members how to harness and treat the donkeys (see Plate C9, Appendix C). There are 21 members in the group. They meet every 2 weeks at different locations to discuss how to improve donkey welfare. David cycles to the meetings.

[72] The exchange rate at the time of research was 79 Kenya Shillings (kshs) to 1 US Dollar.

David also belongs to a merry-go-round group. Each person contributes 300 kshs every fortnight. There are 20 members in the group. Twice monthly a ballot is held for distribution of money among group members in turn. They know each other personally and have mixed occupations. Strangers who join the group go to the end of the ballot queue to show their commitment and to gain the trust of the group. People who fail to pay twice in a row leave the group and their contribution refunded. The group began as 10 members. Every 10 months each member is rewarded with 6,000 kshs. If at any point one of the members is in financial difficulty or facing an emergency, such as family illness, funeral or retrenchment, additional money is 'banked' by the treasurer of the group to be paid to the member in dire straits.

David's wife belongs to 6 social groups – David pays 2,000 kshs per fortnight for her merry-go-round groups. While the merry-go-rounds are not always disaggregated by gender, they are often grouped by women or men only, as women generally contribute less money than men, but are more punctual with repayments: "a man can be arrogant and misuse group funds – women fear where money will come from without the group."

Of course, social capital does not just denote networks and groups. Indeed there is a direct relationship between social capital bonds and rural-urban linkages and migration trends. While this aspect of social capital maintenance was not directly explored in this case study, it is interesting to note the extent to which people are prepared to spend on travel to sustain such linkages, as demonstrated in the example of a driver in Box 7.3.

Box 7.3: Driver case study

10 October is President Mehru Day. Many people travel to their rural homes to visit relatives on holiday. A driver at the University travels 100km home to Ngurubani in Mwea District from Nairobi, every weekend because he would rather be at home than in Nairobi. This is indicative of the strong social linkages that exist between rural-based families and urban migrants who seek work in the capital. It should be noted however, that migration also has the potential to cause a disintegration of social capital when migrants become strangers in urban settlements.

In most instances, the social groups organise events such as weddings, and increasingly, funerals, but few are organised to promote accessibility, either through provision of means of transport, or through voluntary labour to improve community access routes. There are however, some exceptions, notably in Mwea and Kalama.

The Nguka Taxis are one such group that operates boda boda bicycle taxis in Ngurubani, Mwea Division (see Box 7.4).

Box 7.4: Nguka taxis self help group

There are 24 members in the Nguka boda boda taxi self help group, which began when a handful of local businessmen began employing out of work youths to take passengers on bicycles they owned and charge them for the service. There is a charge of 2,500 kshs to join the association as a licensed boda boda operator, and the group contributes 500 kshs a year to the council. Members contribute money each week to a kitty, and then hold a ballot where one member receives the kitty, with which to purchase a bicycle (at a cost of 2,800 kshs). The self help group will continue until every member has paid for a bicycle out of the group's kitty. The self help group acts as a boda boda station where they have constructed a shelter (see Plate C10 in Appendix C) and they operate a queuing system where each boda boda operator receives a fare and then goes to the end of the queue to ensure there is an equitable distribution of fares.

The boda boda generally only service areas that cars cannot access, and hence they have captured a niche in the market. There are 28 bicycles in the self-help group, with some members owning two bicycles. Most members own their own bicycle, but some rent them from an owner to which they must pay 60 kshs per day, whether they have generated 60 kshs in fares or not. Often whole days can be spent without receiving a fare, particularly when the bicycle is under repair.

Due to the rough terrain they travel on, the boda boda incur high maintenance costs, with typical repairs costing more than a day's income:

- Bicycle tyre: 250 kshs
- Bicycle tube: 100 kshs
- Bicycle chain: 100 kshs

Average earnings of Nguka taxi operators are 500-1000 kshs per week, and there are seven other boda boda groups in Ngurubani that service different routes.

The Machakos District of Kalama is characterised by steep terrain and terraced farms (instigated by the Ministry of Agriculture in 1972 to prevent soil erosion). In discussions with the agricultural extension officer in Kyangala, it emerged that under the administration of the local Chief, the community adopted maintenance of the feeder road network. Since 1992, with the introduction of a multi-party state, this practice was aborted, as the Chief no longer had the authority to mobilise the community. According

to a focus group respondent, the roads are only mended every ten years, and the effects of erosion and gullying, exacerbated by tree cutting for firewood, leading to surface run-off, and the use of ox-sledges that cause rutting in the road, have caused tremendous degradation of access routes. There are now only small village groups that make repairs to stretches of road that lead to their own property (See Box 7.5).

Box 7.5: Ruth Muhavi

Ruth works as a nurse at Kyangala dispensary. She lives with her husband and two children on a very steep hill 3km distance from Kyangala. She owns a wheelbarrow as bicycles are inappropriate for the terrain. The nearest person who owns a vehicle lives 3km from Ruth, and hence when Ruth's mother was ill, she had to travel to Kyangala in a wheelbarrow.

Ruth belongs to a women's church group that meet once a month, 3km up the hill where she lives, along with a primary health group and three other women's merry-go-round groups. She spends 2000 kshs a month visiting friends and relatives in Nairobi and elsewhere.

In Kalama there is a District Officer (DO) who used to mobilise labour on the road by providing food-for-work. Since the DO left, this system no longer exists, but people in the community want it to be revived "people need to be mobilised to repair the road if there is food or not". The earth road on which Ruth lives was constructed in the 1970s by a community committee, who provided labour or money to mobilise road repairs. Unfortunately, the programme was unsustainable, and currently repairs are only made to the road if there is a death in the community and the body and funeral procession have to pass along the road by vehicle or on foot. Similarly, if Ruth has a specific function that requires access, such as a wedding, she will mobilise friends, rather than the whole community to make repairs to the road.

7.5 Social Trip-making

The first hand accounts of structural networks described in Boxes 7.1 to 7.5 show that strong structural and cognitive social capital exists in rural communities of Kenya. Individuals with a common interest draw on and support the maintenance of social capital networks in a subconscious effort to stave off vulnerability. Examples given here include farmers that produce French beans, self-help groups that collectively seek credit, small business operators such as boda boda taxi riders and whole village communities who share a common interest in the condition of the local feeder road.

The analysis of data from the household questionnaire and travel diaries that follows, identifies the link between the proactive maintenance of social capital networks, and trip-making patterns. The case study demonstrates the extent people are prepared to travel, and spend money on transport, to undertake social activities.

Of the sample surveyed in Mwea, Lari and Magadi Divisions, the number of journeys made for social trip purposes per year varied. The three social activities that were most regularly pursued were leisure activities (average of 141 trips per year), attending a place of worship (average of 114 trips per year), and visiting friends (average of 106 trips per year). Figure 7.4 illustrates the variation in social trip-making between divisions. Leisure activities featured highly among those sampled from Lari (270 trips per year, equivalent to five times a week), while in Magadi journeys to a place of worship (of any religious denomination) accounted for an average of 214 trips per year, equivalent to four times a week.

Of course, the graph does not account for trip distance, and hence the frequency of trip-making may well be biased by the distance travelled, for example the number of journeys made to visit friends, are likely to be higher where friends live in close proximity to the origin of the trip. In addition, these figures do not encompass value judgements involved in making decisions about journey purpose, and frequency of that journey, dependent on a range of factors including the intensity of relationships with friends and relatives, and the opportunities available to undertake leisure and sports activities.

Indeed, virtually all of the social purposes listed in Figure 7.4 will most likely have values attached to them that vary between respondents and will undoubtedly bias the frequency of journeys made in each division. Nevertheless, the propensity for making journeys that will strengthen social capital stocks is clear, with trips to burial societies, village committees, women's groups and religious meetings accounting for weekly trips (52 trips per year) in some divisions, most notably Magadi and Mwea.[73]

[73] It is worth noting that respondents were asked to provide trip-making information for journeys made in the *last year*. They enabled information to be ascertained on journeys to friends, relatives, funerals and weddings that usually take place sporadically, and not routinely like meetings of community associations and parent-teacher associations etc.

Figure 7.4: Frequency of average annual household trips by social purpose, Kenya (2002)

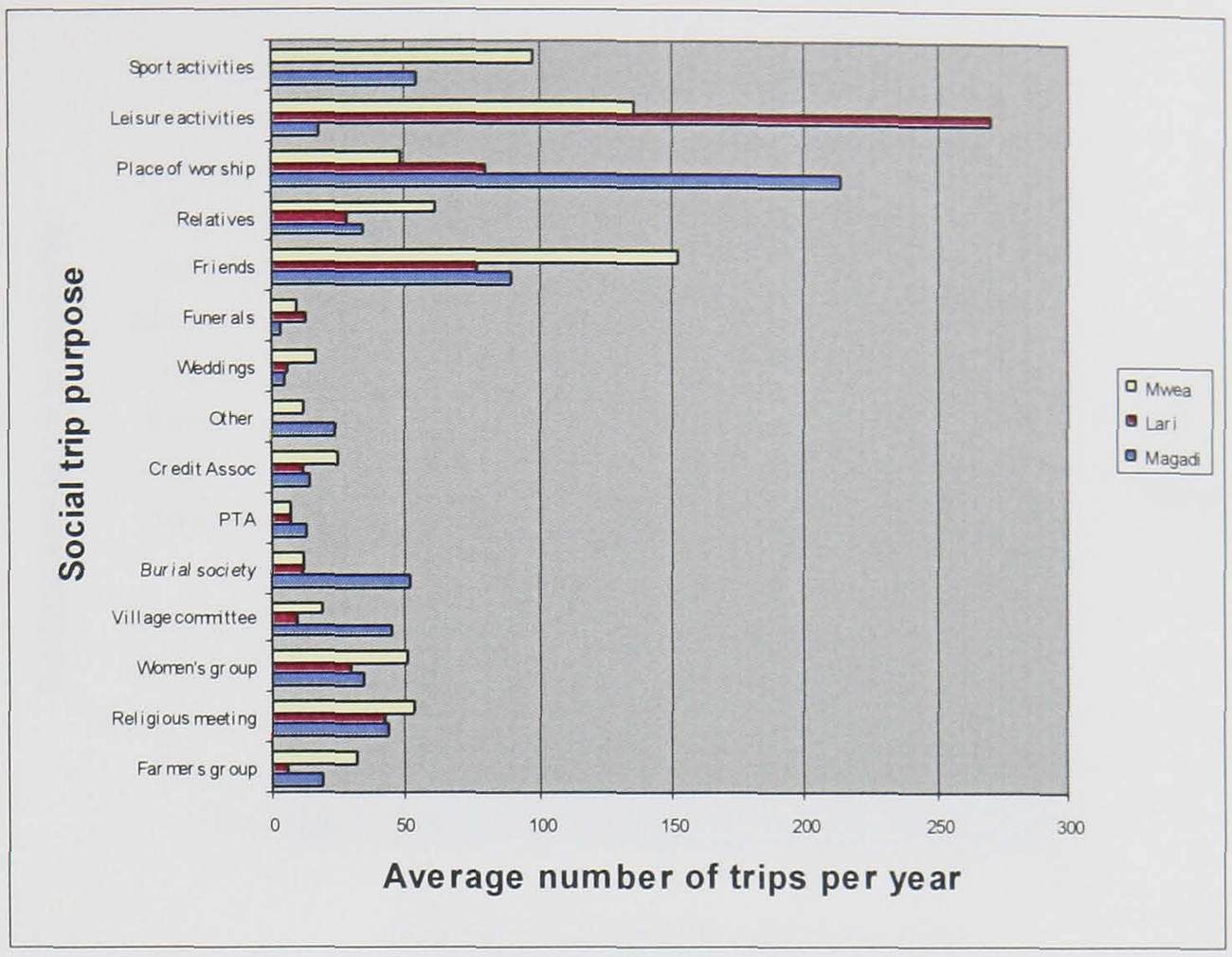


Figure 7.5 shows trips made for income earning and subsistence purposes that are based on necessity and not subjective value, in as much as they denote essential activities. The majority of activities listed, especially those related to health, education, employment, subsistence (grinding mill), and agricultural activities (marketing, harvesting, farming) are necessary for the livelihoods of rural inhabitants. However, visits to hospital and formal employment in Magadi, and health clinic and secondary school in Mwea were the only activities shown in Figure 7.5 that were undertaken over a hundred times a year. This is somewhat surprising, given that these activities would have more weight in reducing poverty, than would the social activities presented in Figure 7.4.

Arguably, income earning activities would typically take place in the immediate neighbourhood, as residential location is most often dictated by the potential for generating an income. Hence, journeys made to destinations adjacent to the trip origin may not have been registered by respondents if the activity was not considered to require a physical journey.

Figure 7.5: Frequency of average annual household trips by income earning and subsistence purpose, Kenya (2002)

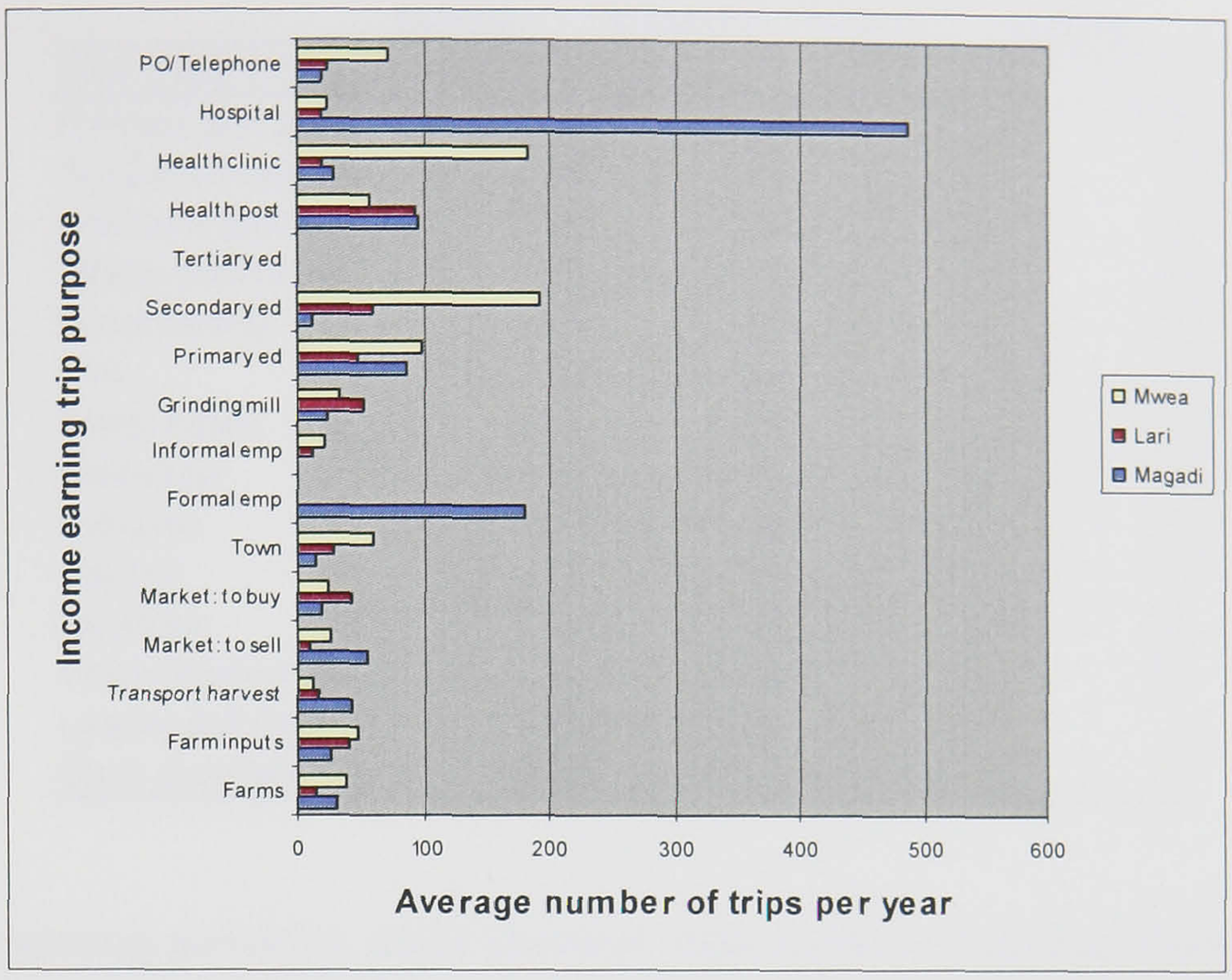


Table 7.1 presents the breakdown of journeys per year by purpose, gender and age for all divisions from the household surveys. Men undertook the majority of social trips, possibly because they had more access to surplus cash than women through income earning opportunities and formal employment (for which 100% of all trips were made by men). Nevertheless, women undertook more journeys than men to access credit associations, which is in keeping with the notion that credit providers have more trust and confidence in women to pay back loans, and women are more likely than men to access credit from such associations (Ellis, 1997). The only significant journeys that children (under 18 years) undertook were to weddings, funerals, to visit relatives, and places of worship, which substantiates the data given in Figure 7.4.

The frequency of trips declined with increasing distance for social and income earning activities (see Figure 7.6). This trend was most pronounced for social trip-making activities, where the frequency of social trips dropped to below 20 journeys per year beyond 40-50km. Visits to friends and relatives continued, albeit infrequently (on average between 1 to 15 trips a year), for up to 250km from the trip origin.

Table 7.1: Proportion of social journeys disaggregated by gender and age, Kenya (2002)

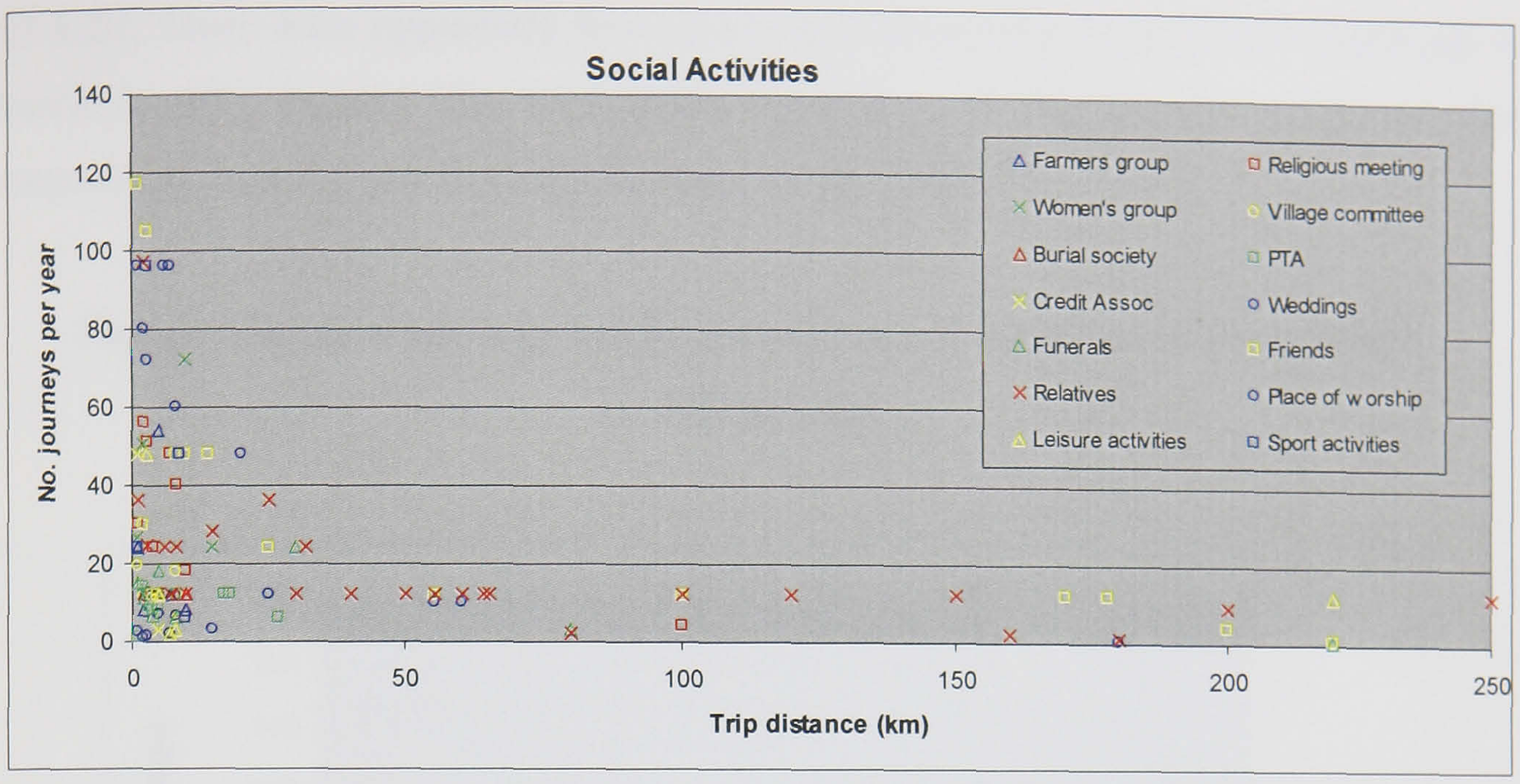
	% Men	% Women	% Boys	% Girls
TRIP PURPOSE SOCIAL ACTIVITIES				
Farmers group	73	25	2	0
Religious meeting	46	39	7	7
Women's group	14	76	4	6
Village committee	86	11	3	0
Burial society	51	47	1	1
PTA	55	39	3	3
Credit Assoc	46	54	0	0
Weddings	40	39	10	10
Funerals	36	39	12	12
Friends	53	45	1	1
Relatives	34	38	14	13
Place of worship	27	28	22	22
Leisure activities	86	11	2	2
Sport activities	100	0	0	0

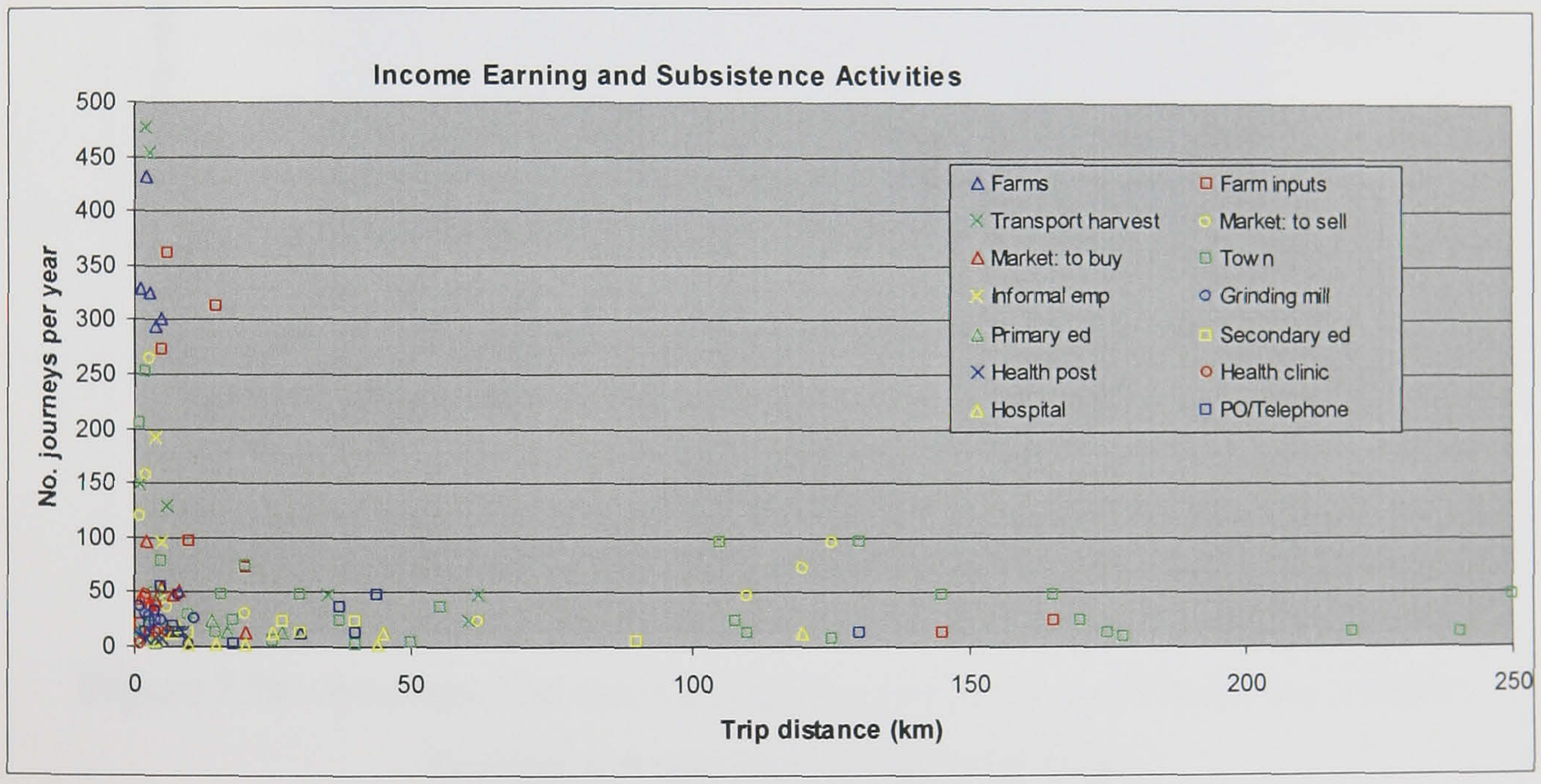
For income earning activities, more journeys were made at increased distance from the origin, especially for visits to town,[74] and also to collect farm inputs. At short distances, many more journeys were made per year (up to twice daily for transporting harvests and visiting farms), and this was likely to be because these trips were considered a necessity, and not perceived to be luxury, like some social trips (notably leisure and sport). Arguably, many social trips might have been perceived as nonessential, and were hence undertaken more regularly at close proximity to the trip origin where the cost of accessing the social activity is cheaper and less time consuming.

There were a small proportion of trips (7%) made beyond 50km from the trip origin, compared with 10% of the total number of average income earning journeys. Visits to friends and relatives accounted for most of these social trips (86%) undertaken beyond 50km, indicating the importance of access to social capital destinations, given the frequency and distance of destinations involved. Similarly, Airey and Cundill's (1998) longitudinal study of household travel in the Meru District of Kenya reported that visiting relatives and friends continued to be the most important component of social travel at each three year increment of the six year study in 1983, 1986 and 1989.

[74] 'Town' denotes the nearest major town or city to the survey site, and can include the Capital city.

Figure 7.6: Average journey frequency per household by distance in all divisions, Kenya (2002)





The charts do not however account for the cost or mode of such trips, and these will be explored here. Figure 7.7 compares the average trip cost[75] for social and income earning purposes in Mwea, Lari and Magadi Divisions. The general impression from the data is that a higher proportion of respondents sampled paid for income earning journeys using public transport, such as bus or matatu.[76] Fee paying trips were highest for travelling to secondary schools (average of 300 kshs in Magadi), which is not surprising given their large catchment areas and provision for boarding pupils. Yet, for most divisions,

[75] Applies to trips made on public transport (for example boda boda, bus, matatu etc). Trips made using a mode that does not require payment (for example walking, bicycle etc) are not included in this dataset.
[76] 'Matatu' is a public transport minibus used in Kenya and other countries of East Africa, often privately operated.

particularly Lari and Magadi, income earning trips cost money, with the exception of trips to farms, to collect farm inputs and to transport harvest, all of which cost less than 25 kshs. There were apparently few social destinations that respondents would pay to travel to, either because they were within walking or cycling distance or because they were not prepared to pay to travel for these social activities.

Figure 7.7a: Average trip cost by purpose per household in Kenya (2002) - Social trips

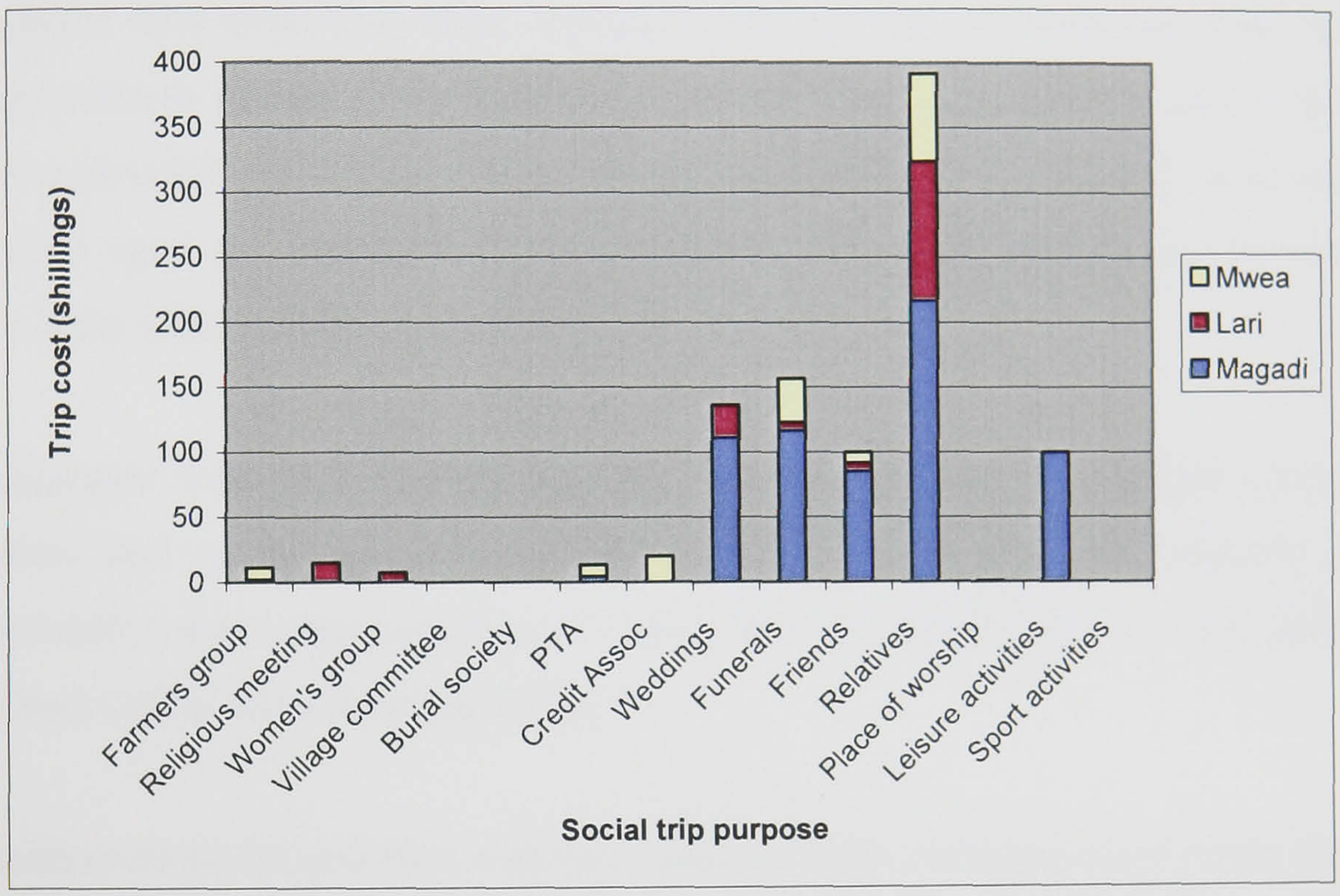
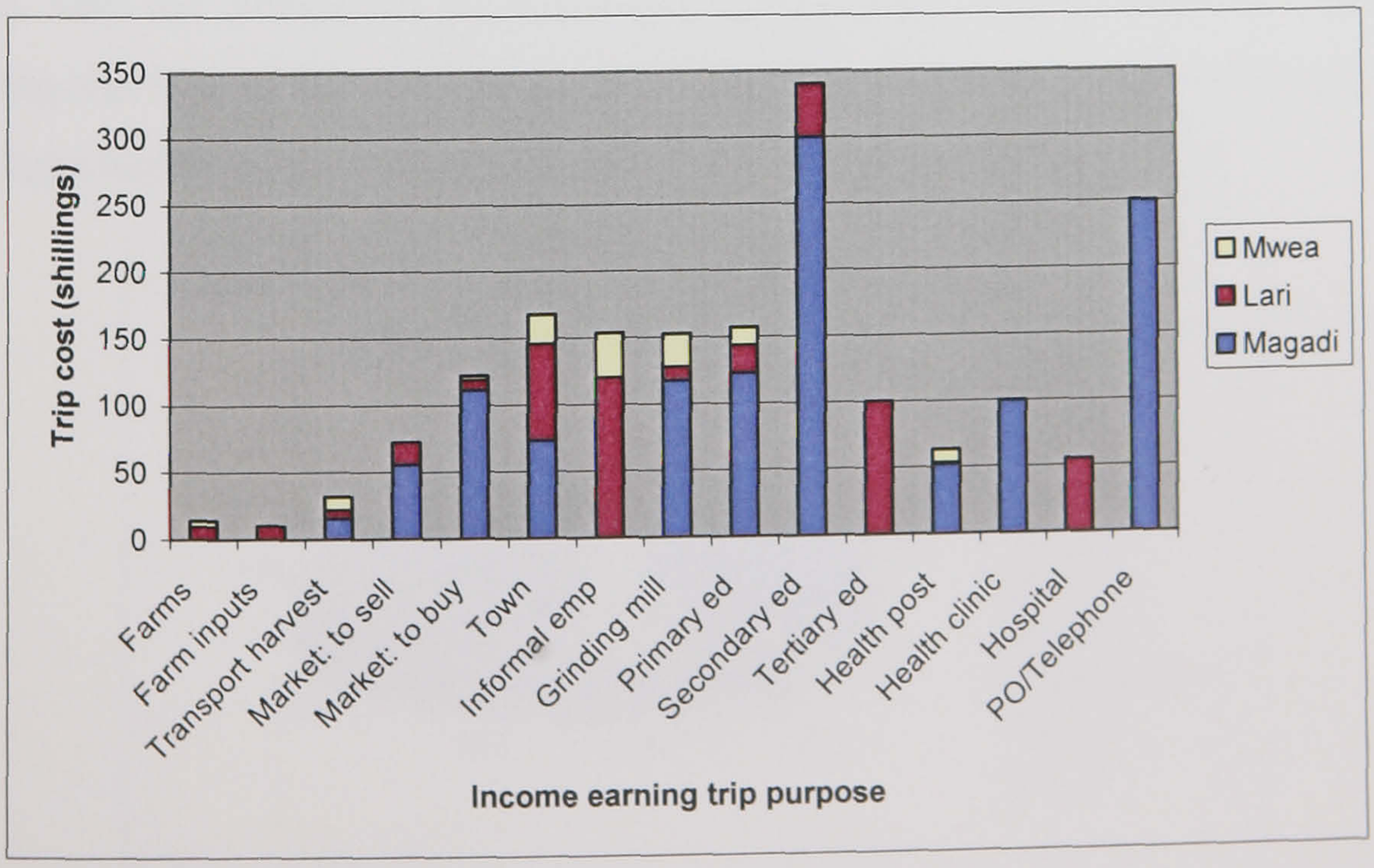


Figure 7.7b: Average trip cost by purpose per household in Kenya (2002) - Income earning and subsistence trips



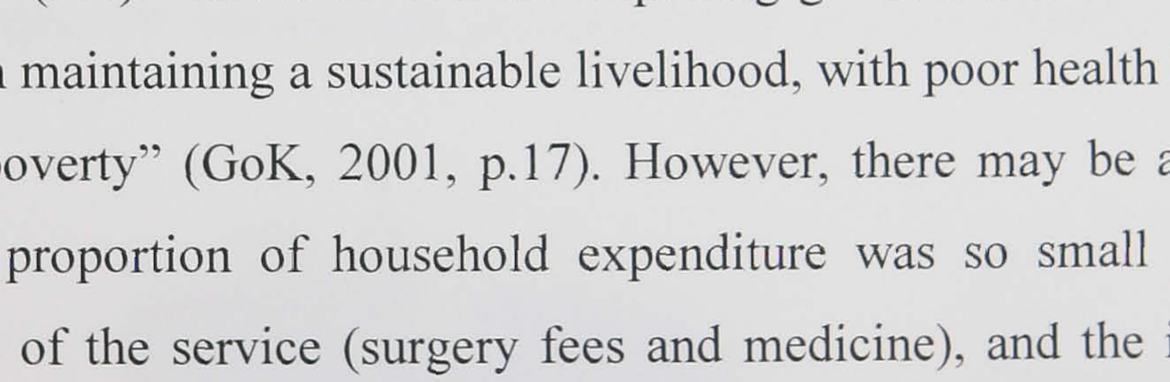
In some divisions (notably Magadi) however, the cost of making nonessential social journeys was disproportionately high. This was especially true for attending weddings, funerals, visiting friends, and visiting relatives at an average cost of 217 kshs in Magadi, and taking part in leisure activities. Arguably, people were prepared to invest money in accessing these particular social activities, more than they would for some income earning activities, regardless of the distance travelled. Evidently, quality of life that can be derived from nonessential activities was sufficiently high for the investment made in physically accessing them.

The sample data show that large transport cost and time investments were made in visiting relatives, because they can be a source of continuous social capital. There is a greater probability of making returns on such investment in the future when relations are called upon for assistance during financial crisis or other periods of adversity (illness, crop failure, famine, unemployment etc).

The aggregate household expenditure data from Mwea, Lari and Magadi (see Figure 7.8) show that on average 12% of total expenditure was spent on transport. It was proportionally more important than all other types of expenditure, the only exceptions being food (36%) and schooling (19%).

Expenditure on social activities was also relatively high, matching the monthly spend on medical healthcare (5%). This is somewhat surprising given that healthcare is such an important factor in maintaining a sustainable livelihood, with poor health being "a quick way to fall into poverty" (GoK, 2001, p.17). However, there may be any number of reasons why the proportion of household expenditure was so small for 'medical', including the cost of the service (surgery fees and medicine), and the infrequency of attending a health clinic or hospital (this has been explored in Figure 7.5).

Figure 7.8: Proportion of monthly household expenditure in Kenya (2002)

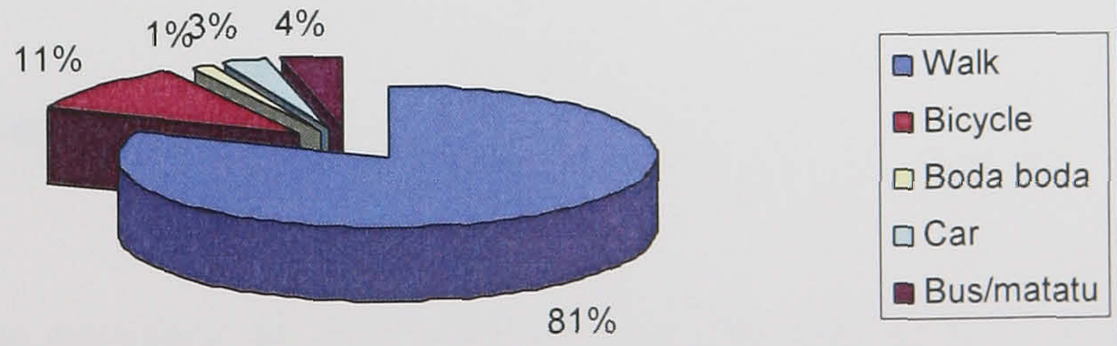


It is possible that expenditure on healthcare was lower because the cost and distance of accessing healthcare providers was so prohibitive. In their proximate determinants of poverty, the Kenyan PRSP describes "the time taken to reach a health facility as an important indicator of access to health facilities… access to health services by the poor – availability, affordability and physical accessibility of drugs and consultations – has been limited due to factors ranging from cost sharing and long distances to health facilities" (GoK, 2001, p.17).

In contrast, the Airey and Cundill study (1998) showed that visits to hospitals and dispensaries retained their relative importance, accounting for a fairly consistent share of all journeys in the three survey years (13%, 14% and 13% in 1983, 1986 and 1989 respectively).

As regards modal choice for social trips, the household survey of Mwea, Lari and Magadi reveals that a massive 81% of social journeys were made on foot (see Plate C11, Appendix C) (compared with 70% for income earning journeys). The results displayed in Figure 7.9 are not altogether surprising given that expenditure on social trip making was relatively low, hence the assumption is that fewer people paid for public transport (only 4% of the sample surveyed travelled by bus or matatu for social activities in the last year).

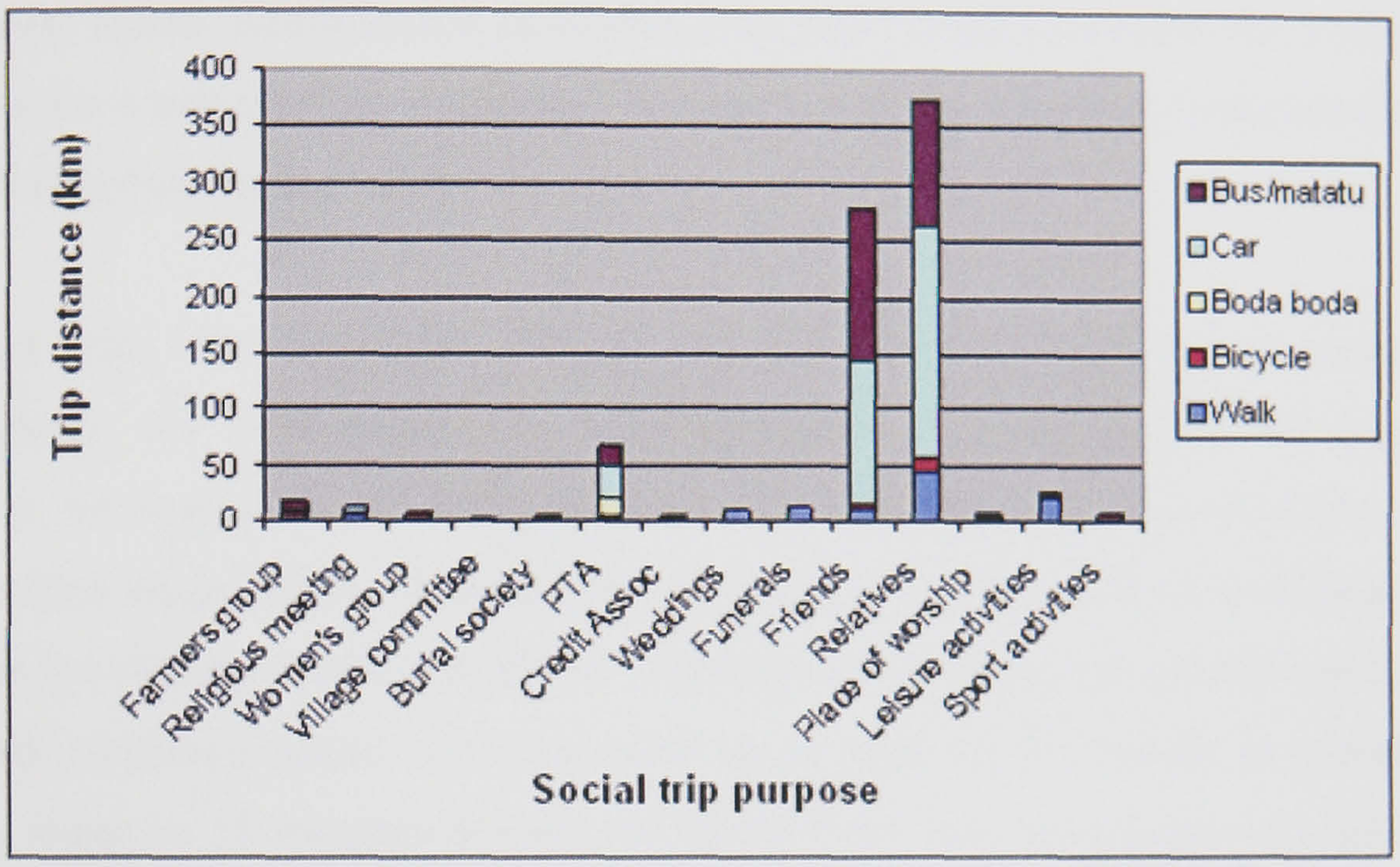
Figure 7.9: Modal split for social trips in Kenya (2002)



The data in Figure 7.10 corroborate the trend of the frequency of journeys by distance, displayed in Figure 7.6 that shows trips made to visit friends and relatives as being of high importance and that respondents were prepared to pay for trips to visit friends and relatives (Figure 7.7). Similarly, in the chart below the 4% of social trips that are made by bus and matatu accounts for a large proportion of the distance travelled to visit

friends and relatives, which demonstrates a) the propensity for people to travel long distances outside the immediate locality for maintaining networks with friends and family, and b) the investment in time and money in the physical act of making these journeys.

Figure 7.10: Average trip distance by mode per household for social trip purpose, Kenya (2002)



These graphs provide some indication of the strong relationship between physical trip-making and social capital maintenance. As social capital itself is very difficult to measure, the trip-making characteristics of the rural poor have been used here as a proxy for acquisition of social capital assets. The next section will explore the direct link between social capital and mobility.

7.6 Social Capital and Mobility

The preceding section provides an overview of trip-making in Kenya that is strongly correlated to maintaining both cognitive and structural social capital. The direct linkages between a) *mobility*, b) *accessibility*, and c) *social capital* are summarised in the Kenyan context by the following:

1. Cost and time investment in the generation and maintenance of social capital
2. Income generation derived from social trip-making
3. Temporary and permanent migration and maintenance of rural-urban linkages
4. Substitution of financial capital assets (transport costs) for social capital assets (increased social networks)

5. Social capital used in the management of risk – removing the cause and effects of isolation
6. Social capital benefits used as justification for road investment in remote rural areas

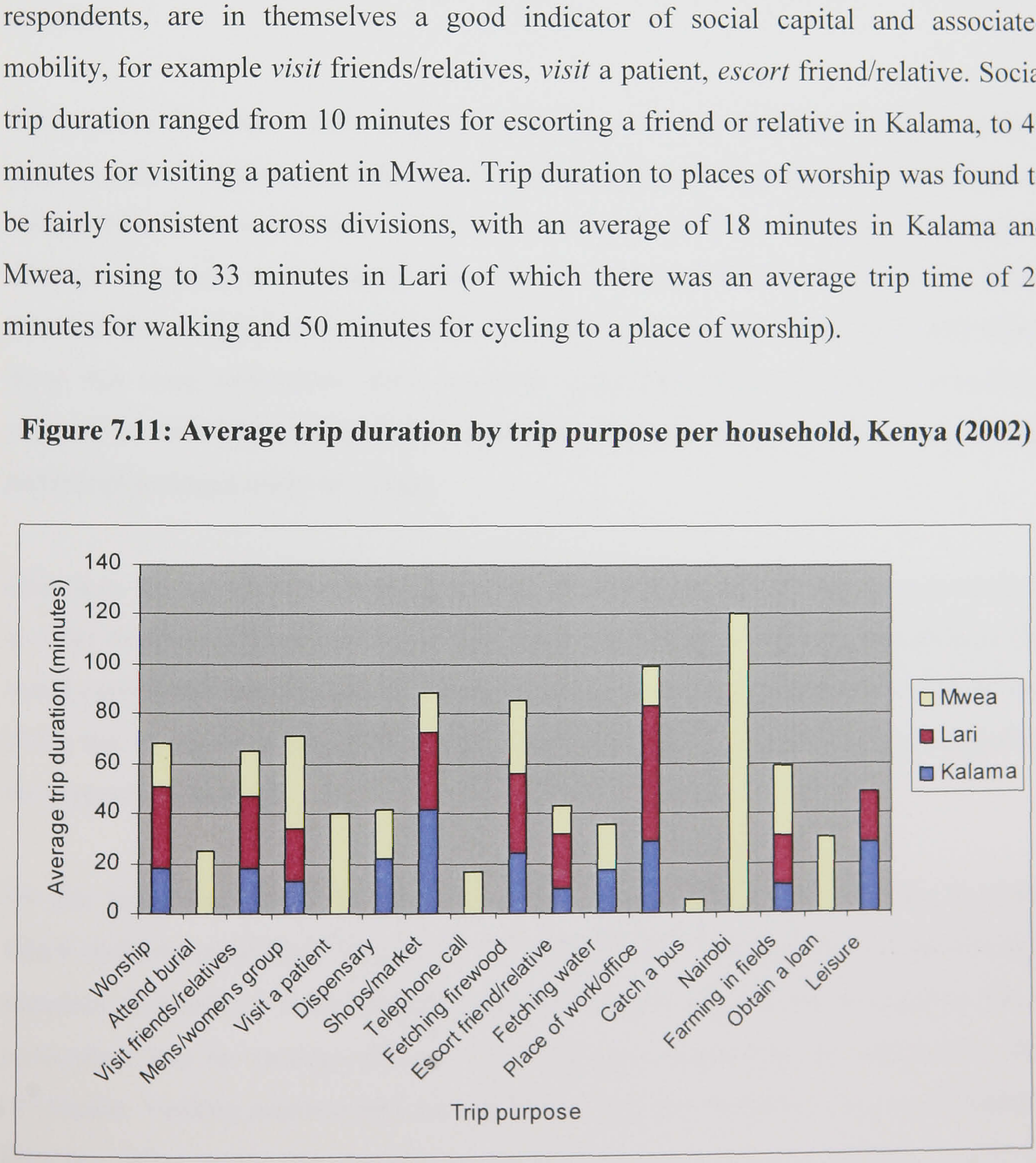
These issues shall be reviewed in turn.

1. Cost and time investment in the generation and maintenance of social capital

The travel diaries administered in Mwea, Lari, and Kalama recorded the average trip duration for a combination of essential (income earning or subsistence) and nonessential (social) trips (see Figure 7.11).

To start with, the description of trip purposes, as described by the travel diary respondents, are in themselves a good indicator of social capital and associated mobility, for example *visit* friends/relatives, *visit* a patient, *escort* friend/relative. Social trip duration ranged from 10 minutes for escorting a friend or relative in Kalama, to 40 minutes for visiting a patient in Mwea. Trip duration to places of worship was found to be fairly consistent across divisions, with an average of 18 minutes in Kalama and Mwea, rising to 33 minutes in Lari (of which there was an average trip time of 27 minutes for walking and 50 minutes for cycling to a place of worship).

Figure 7.11: Average trip duration by trip purpose per household, Kenya (2002)



For visiting friends and relatives, the distribution of average trip duration between Kalama, Lari, and Mwea Divisions was similar to that for attending a place of worship (18 minutes, 29 minutes, and 18 minutes respectively). Although the distribution between mode is somewhat different, especially in Lari where the average journey to visit friends and relatives by walking took 23 minutes, compared with 60 minutes by matatu.

The duration of trips to men's and women's groups also varied widely. Figure 7.11 shows an average distribution of trip duration as 13, 21 and 38 minutes in Kalama, Lari and Mwea. Similarly, while the average trip duration for leisure activities was only 28 minutes for Kalama, and 20 minutes for Lari, the modal distribution reveals journey times of 10 minutes by walking, 90 minutes cycling, and 21 minutes by matatu in Kalama.

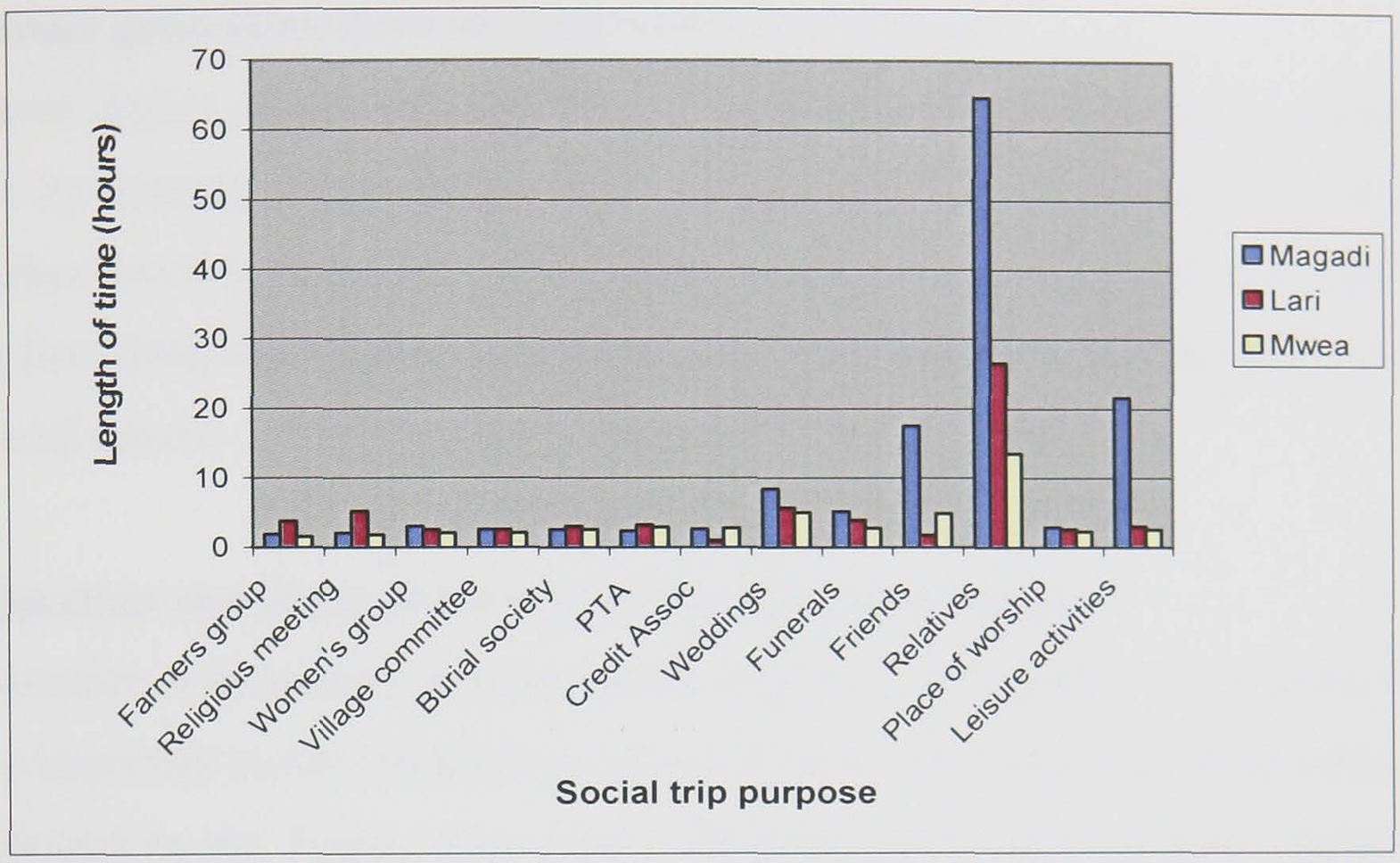
The reasons for such widely disparate responses on trip duration by social purpose cannot easily be explained. Certainly, the distance travelled for essential trips does not widely differ from social trips, except that travelling to work in Lari took on average 55 minutes, and travel to the Capital Nairobi took 2 hours from Mwea. The travel diaries revealed that a significant amount of time was spent making these trips, particularly those that were undertaken more regularly, especially leisure activities, attending a place of worship and visiting friends and relatives (refer to Figure 7.4 for the average number of journeys made in a year).

Data from the travel diaries support the household questionnaire data, by indicating the average duration of stay at the trip destination. While these data do not directly link social capital and mobility per se, they do however give an indication of the significance of the trip, given the assumption that the longer the duration of stay, the more important the purpose of the visit.

On this basis, and given the data displayed in Figure 7.12, there were few activities which could be considered 'important' if length of stay is an indicator. Of the divisions sampled, respondents from Magadi spent the longest time at the destination, this is particularly true for visiting relatives, for which the average stay was nearly three days (65 hours). Visiting relatives in Lari and Mwea was also deemed to be more important than any other social trip purpose in terms of time investment. Indeed, in Lari the average length of stay was 27 hours, and in Mwea 14 hours. In Magadi, however the

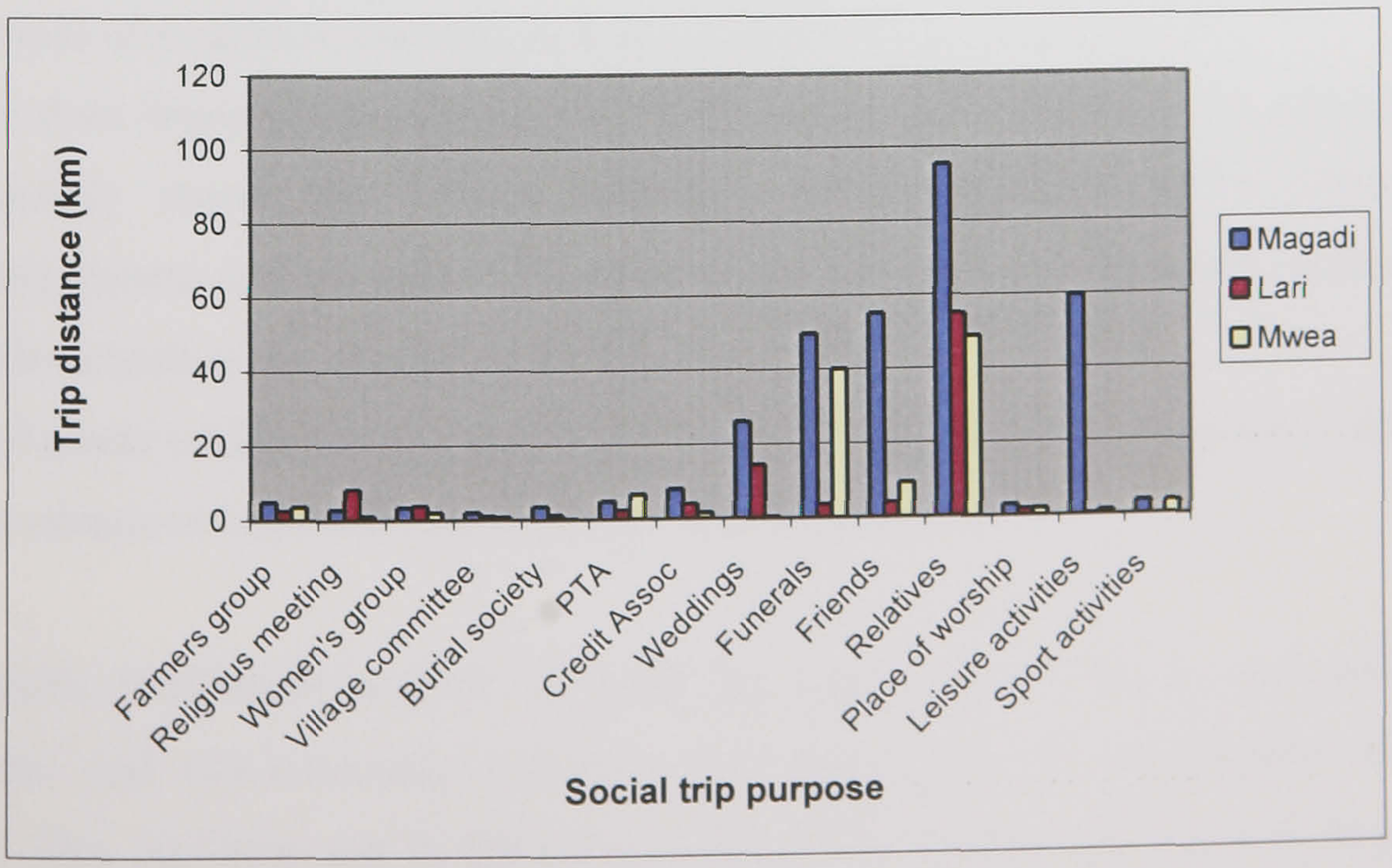
length of stay was also high for visiting friends (18 hours), and for leisure activities (22 hours).

Figure 7.12: Average duration of stay at destination, Kenya (2002)



The findings in Figure 7.12 are closely correlated to those displayed in Figure 7.13, which shows trip distance by social trip purpose from the travel diary data. For Magadi, the distance travelled to leisure activities (60km), relatives (95km) and friends (55km) is comparable to the length of stay at the destination, and similarly for visits to relatives in Lari (55km) and Mwea (49km). Hence, the length of stay at social destinations was, at least in part, dictated by the distance travelled to reach the destination.

Figure 7.13: Average trip distance by division in Kenya (2002)



The data reveal that average duration of stay at destinations for income earning and subsistence purposes was much shorter than for social purposes. In particular, farm, harvesting and marketing activities (ranging from 2 to 8 hours stay) that were undertaken regularly and were of closer proximity to the trip origin.

2. Income generation derived from social trip-making

The travel diaries reveal that only 17% of household members sampled, generated an income by making a trip (taken from an aggregate of social, income earning and subsistence journey purposes). This implies that respondents invested time and money in over four fifths of all journeys made without benefiting from any immediate financial or material returns.

3. Migration and the maintenance of rural-urban linkages

The dynamics of temporary and permanent migration that supports rural-urban linkages are also important in the maintenance of social networks. Migration characteristics were not captured in the Kenya case study. However additional research carried out in Zimbabwe and Uganda in 2001 reviewed sustainable livelihoods, access and mobility needs, and rural-urban linkages in a transport corridor of 80km between the respective capital and secondary city in each country (Bryceson *et al*, 2003).

Bryceson's study was divided into three phases, in which focus group discussions, household and transport surveys, and transport activity logbooks were completed at four sites along the transport corridors, comprising primate city, peri-urban locality, rural village and secondary city. The following rural-urban mobility trends were noted:

- Long distance journeys beyond the transport corridor are often forgone during periods of economic hardship in both countries
- For short distance trip-making, the highest and lowest income groups were found to regularly travel the longest distances in Zimbabwe, possibly affected by retrenchment and the recent downturn in the economy and hence the catalyst for a wider search of alternative employment
- In Uganda middle income groups were found to travel longer distances – due to the prevalence of boda boda bicycle and motorcycle taxis.

Sustainable livelihoods analysis revealed the importance of access and mobility to economic and non-economic activities, and highlighted the significance of social capital. This was born out in the participatory focus groups and travel diaries, which

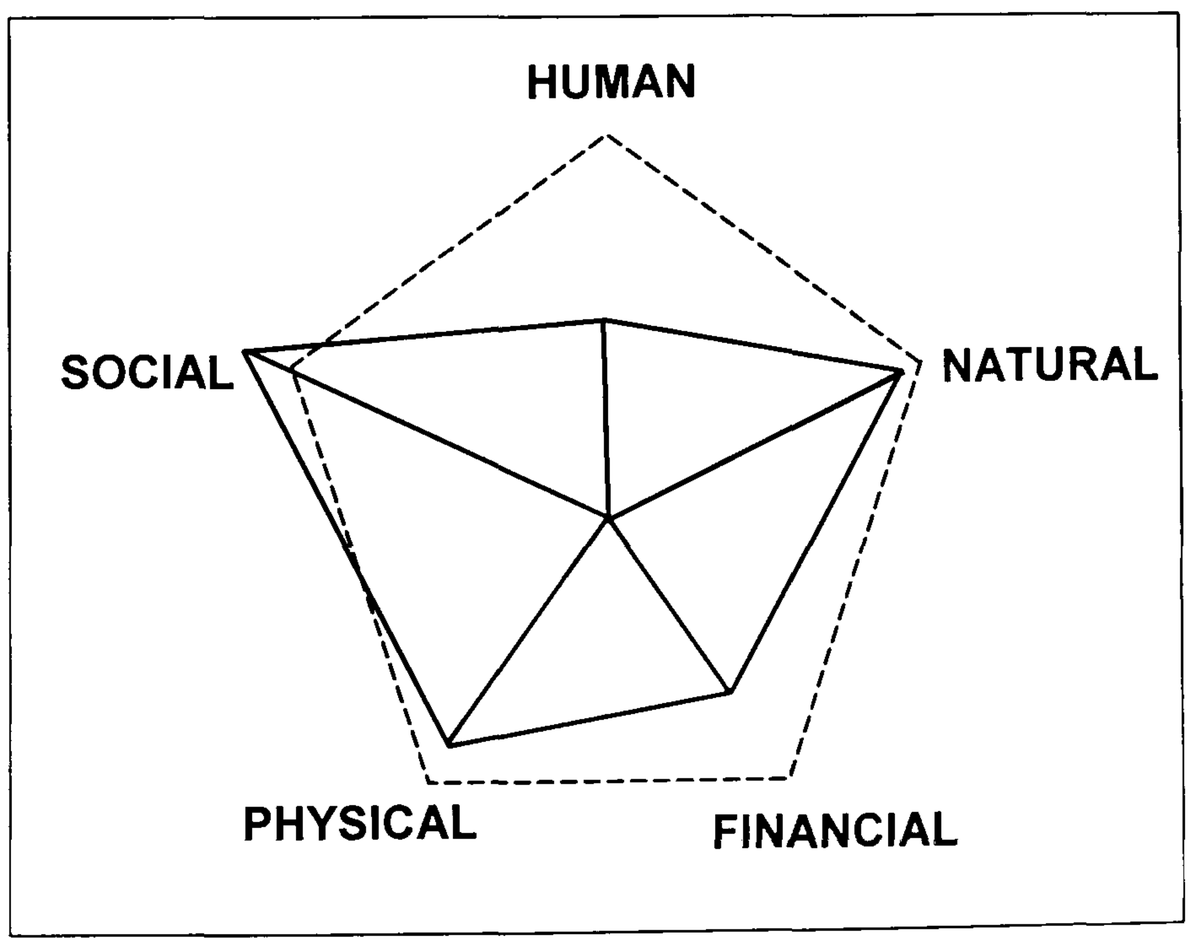
revealed that "historically embedded cultural preferences (in Zimbabwe) are an essential component of mobility patterns. This is evidenced by (Zimbabweans') rural-urban migration patterns, complex notions of 'home' and rural home as a frequent travel destination" (Bryceson *et al*, 2003, p.46).

The study indicated the value that the urban and rural poor place on maintaining links with extended family networks, and the significance of rural-urban mobility in facilitating social trip-making.

4. Substitution of financial capital assets for social capital assets

As Frankenberger and Garrett (1999) explain, communities have their own mechanisms for addressing vulnerability that include risk minimising strategies, loss management strategies and asset substitution strategies. Certainly, social capital can be invaluable in reinforcing these livelihood strategies. In fact, as the Kenya case study demonstrates, the rural poor actively substituted financial capital (in the form of transport service charges) and human capital (in the form of time required in making journeys to and from the source of social capital) for increased social capital assets. The schematic diagram in Figure 7.14 illustrates this pattern of asset substitution.

Figure 7.14: Asset substitution in accessing social capital



5. Social capital used in the management of risk

The use of social capital in the management of risk by the rural poor is well documented (please refer to Section 2.6, Chapter 2). The Kenya case study supports the concept that

relationships between friends, relatives, community associations and even revolving credit funds provide a strong support network for mitigating shocks and stresses associated with the vulnerability context in Sustainable Livelihood Approaches. However, social capital networks should not always be treated as a panacea for financial sustainability, poverty targeting and women's empowerment. Mayoux (2001, p.454) describes the assumption underlying the paradigm that social capital is inherently positive and beneficial in Cameroon where "the poorest women and most disadvantaged women may be excluded from tontines and other types of group." She further claims that "the current preoccupation with social capital and its lack of analytical rigour risks further marginalizing attention to the underlying and critically important issues of gender inequality in resources, rights and power" (Mayoux, 2001, p.462) (see Section 9.3, Chapter 9). Nevertheless, from the perspective of the road sector, the question is how can the concept of social capital and associated networks be adopted by key policy and decision makers as a key justification for road investment in remote rural areas?

6. Social capital benefits as justification for road investment in rural areas

The transport sector consumes a considerable part of overall donor investment in developing countries (Gannon and Liu, 1997). With the current focus on poverty reduction, there is increasing emphasis on investment in low volume roads that service the remote poor. However, traditional appraisal frameworks, such as cost benefit analysis, do not cater well for the poverty reduction and other social benefit issues of roads. The inclusion of social benefits within appraisal techniques has the potential to focus investments on the poor in line with the Millennium Development Goals.

Over the last twenty years, road investments in developing countries have been planned and prioritised on the basis of economic appraisal models (Lebo and Schelling, 2001) and prioritisation indices/ranking procedures. The latter procedures are more often used to plan rural access or feeder roads. These are less economic in orientation and often include a social benefit component, yet there is no commonly accepted method of defining or incorporating social benefits into road appraisal criteria (TRL, 2004). Nevertheless, the adoption of social benefits (that includes social capital stocks) are likely to be highly significant in areas where there is no existing access at all, or where existing roads are impassable throughout much of the year, and where existing traffic volumes, population density and agricultural productivity are very low (TRL, 2004).

Social benefits tend to be more intangible than economic benefits because they entail "subjective interpersonal relations that have a variable and incalculable value to individuals" (Bryceson *et al*, 2004, p.14). "Previously, such nebulous issues would have been ignored, but current development theory has given pride of place to social capital considerations" and the psychological and material importance of such interpersonal relations (Bryceson *et al*, 2004, p.14).

7.7 Concluding Remarks

Outcomes of stakeholder consultations for development of the PRSP in 2001 demonstrated that failure in Kenya's development process has in many cases arisen, not from lack of good policy recommendations, but from a "hopeless absence of political will" and "the institutional framework to implement policy, monitor progress and take corrective action" (Sisule, 2001, p.3).

Sisule (2001) believes the growing problem of poverty in Kenya has emanated from two major underlying causes:

1. Policy formulation has not been adequately consultative and implementation has in many cases been haphazard with policy reversals sometimes occurring
2. Due to civic inertia people and their representatives have been unable to influence decisions and allocation of resources leaving central government administrators as the sole decision makers

Sisule (2001) emphasises the need to develop social capital in Kenya where people are unable to influence resource allocation for the reasons given above. He states that deliberate efforts should be made to organise and empower people to have a say in decisions on resources allocation and use at the community level, and through effective linkages and representation, at district and national levels.

In summary, the principle outcomes of the case study are:

- 'Structural' social capital was found to be strongest among participants in the field study, evidenced by membership of social groups and community associations (Boxes 7.1 to 7.5)
- Personal mobility is a significant variable in accounting for the extent of social interaction, particularly for visits to friends and relatives

- Frequency of social trips is related to distance, cost and mode, with most social trip-making undertaken on foot (81%)
- Social relationships between friends, relatives and interactions of social networks and credit funds provide a strong support network for pro-active risk management
- There is a role for social capital benefits in rural road investment appraisal, and for justification of rural transport service subsidy to strengthen 'cognitive' and 'structural' social capital in areas where conventional cost benefit analysis (CBA) does not apply

This empirical research undertaken in Kenya will contribute to the continuing discourse from the perspective of the transport sector, and will provide further evidence for establishing linkages between social mobility and transport sector policy with the potential for influencing investment decisions.

The next Chapter reviews theoretical perspectives of social capital and its potential for contributing to poverty reduction.

CHAPTER 8: ADDRESSING SOCIAL CAPITAL AND MOBILITY SOLUTIONS FOR POVERTY REDUCTION

8.1 Theoretical Perspectives

The preceding Chapter discussed how improved mobility and accessibility can positively affect the development and maintenance of social capital and associated networks in selected areas of Kenya. The objective of this defining Chapter is to review the language of different theoretical perspectives and how these are intrinsically linked to notions of livelihoods and social capital.

Arguably, social capital is pivotal in providing a mechanism for rural communities to signal their problems of isolation and associated vulnerability to macro and micro level institutions that make investment decisions. Yet one of the only existing mechanisms for communities to signal emerging problems and risk is through donor aid projects that increase the dependency of government, of NGOs and of communities, and create a false line of communication between them. If (and when) donor and other external support is removed altogether, there would no longer be such projects to bridge the communication gap, and hence there would no longer be this key mechanism for communities to signal their vulnerability.

This penultimate Chapter is intended to provide a contribution to theory[77] by taking a retrospective view of the research on *relationships between transport, mobility, sustainable livelihoods and social capital for poverty reduction*. In doing so it will review three well-established theories that have been operating in parallel with the development paradigms around which this research has largely been based, and which have strongly influenced the process of the research:

1. Social Development Theory
2. Organisational Theory
3. Systems Approaches Theory

[77] Defined as a systematic organisation of knowledge (Jacobs and Cleveland, 1999).

Before embarking on a review of these selected theoretical approaches, it may help to be reminded of the current and evolving paradigms in which this research has been embedded, as outlined in the Introduction to this thesis and the Review of Literature.

A paradigm is defined by Chambers (1997) as "a coherent and mutually supporting pattern of concepts, values, methods and behaviour, amenable to wide application." Paradigms go through a cycle that could be said to consist of three phases (World Transformation, 1994):

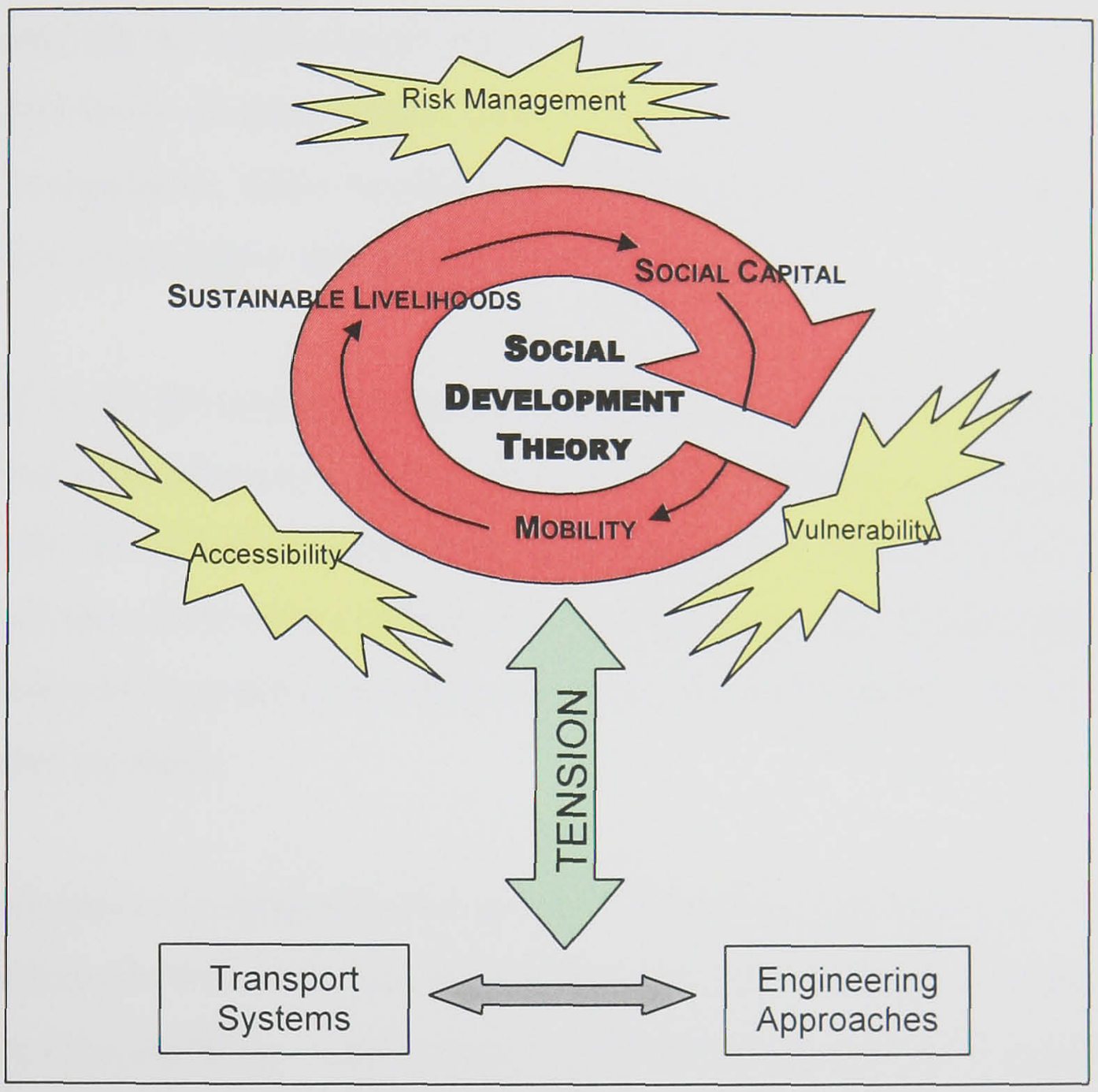
- Phase 1: Problems are solved fairly slowly, because people are reluctantly learning about the new paradigm and it is unfamiliar
- Phase 2: Change occurs very rapidly, the paradigm seems to handle everything smoothly, and institutions would not consider using anything else
- Phase 3: The curve flattens out. The paradigm no longer solves more and more problems. The unsolvable problems are left and that starts becoming apparent. That is when a paradigm shift is bound to happen.

The investigation into linkages between social mobility and the transport sector has been set against a backdrop of poverty reduction strategies, and in particular the Poverty Reduction Strategy Programme of the World Bank, and the United Nation's Millennium Development Goals. One might argue that a paradigm shift took place when the PRSPs replaced the Structural Adjustment Programme of the 1980s and 1990s, and the MDGs emerged from the preceding International Development Targets of the late 1990s.

A paradigm shift will usually take place when too many problems have accumulated that were unsolvable with the previous paradigm (Barker, 1993). Hence, a paradigm shift occurs when the rules are changed, and this tends to be spearheaded by major multi-lateral institutions such as the World Bank and United Nations. It is highly likely that the next major paradigmatic shift in development will take place in 2015, which is the benchmark date against which the Millennium Development Goals will be measured. If absolute global poverty has not been reduced by half by this date, there may well be serious repercussions for developed world governments and multi-lateral institutions who have sought to achieve the MDG targets since the Millennium Summit in 2000.

These global frames of reference will be reviewed and the theoretical perspectives framed in terms of their influence on relationships between social capital, sustainable livelihoods and social development theory, and any tension that exists between them, and transport systems and engineering approaches (represented in Figure 8.1 below).

Figure 8.1: Relationships and tensions in the research



8.1.1 Social development theory

Jacobs and Cleveland (1999) define social development as the process of organising human energies and activities at higher levels to achieve greater results, with development increasing the utilisation of human potential. They describe social development as an upward directional movement of society from lesser to greater levels of energy, efficiency, quality, productivity, complexity, comprehension, creativity, choice, enjoyment and accomplishment (Jacobs and Cleveland, 1999).

This definition of social development distinguishes it from two other social processes, survival and growth (Jacobs *et al*, 1997):

- Survival is the process by which a community sustains itself at the minimum level needed for its existence without any opportunity for horizontal expansion or vertical advancement
- Growth is the process of expansion or proliferation of activities at any established level of development.

A society existing at the level of survival has sufficient energy to meet the most basic human needs, but no surplus available to enhance life at the present level or to direct toward higher levels of achievement (Jacobs *et al*, 1997). Growth involves horizontal or quantitative expansion, while development involves vertical or qualitative enhancement of the level of organisation (Jacobs and Cleveland, 1999).

A theory of social development should provide a holistic and integrated framework for consideration of development factors from multiple perspectives. Rather than singling out a specific set of determinants or giving primacy to a limited set of instruments, it would reveal the nature of the relationships and processes that govern the interaction of all these elements to generate developmental results (International Center for Peace and Development, no date).

Social development is determined by people's behaviour and responses. The aspiration of communities is often expressed through the initiative of pioneering individuals. Take for instance Paul Hoffman, Administrator of the Marshall Plan for European Recovery. who said "Technical assistance cannot be exported, it can only be imported" (Jacobs and Cleveland, 1999, p.6). External forces alone rarely unleash a process of social development, but there are countless instances in which external agents have failed to do so (Jacobs and Cleveland, 1999).

Instances where external forces have halted, or even reversed the prospects for development are not uncommon in road infrastructure projects. One such example is the Rural Infrastructure Development Project (RIDP) in Nepal, representing the country's first attempt to institutionalise the labour-intensive, environmentally friendly and participatory (LEP) approach to the construction and maintenance of low volume mountain roads (see Box 8.1).

Box 8.1: The rural infrastructure development project, Nepal

The Rural Infrastructure Development Project (RIDP), conceived in the mid-1990s, was designed to promote ownership of rural infrastructure residing at the community level rather than at Central or District Government level. The project aimed to improve the livelihoods of the rural poor through improved rural access, achievable through a combination of:

- Improved physical infrastructure (primarily mountain roads)
- Increased participation in the selection, construction and maintenance of the infrastructure
- Improved capacity of decentralised institutions to facilitate ongoing pro-poor development activities.

Despite this conceptual design, the RIDP was required to operate within government procedures in terms of the survey and design processes, bureaucracy, and the norms used to derive the value of works. On close inspection of the project, it became clear that the livelihoods objectives of the project would not be achieved without a radical change to the decentralised institutional arrangements, which have prevented project benefits reaching the intended beneficiaries:

- The local and district road user committees were dominated by powerful political or business interests, and rarely provided a genuine voice to the beneficiaries
- There was widespread use of 'hidden' contractors. Instead of assembling local labourers, these 'gang leaders' act as go-betweens for contractors who employ labourers, often refugees brought from other areas of the country
- The value assigned to work packages in the road construction were deliberately inflated, hence work was being carried out despite there being significant leakage of funds.

The RIDP has demonstrated the lack of accountability of district institutions, and shown how readily project benefits can be captured by those other than the intended beneficiaries.

Source: Goldie-Scot (2001)

A key lesson from the Nepal project is that "'transparency' does not happen by itself. Specific actions are required in order to ensure the ready flow of accurate information,

which constitutes the single most effective weapon in the battle against corruption" (Goldie-Scot, 2001, p.4).

Jacobs and colleagues at the International Center for Peace and Development (1997, p.5) maintain that development is a function of the "velocity of social transactions". Defined as the speed of movement of information, ideas, decisions, technology, people, goods and money, these transactions have a significant impact on the productivity of society and its further advancement. The "shrinking of the world" through better transportation and communication opens up commercial opportunities inconceivable just a few years ago (Jacobs *et al*, 1997, p.5). However, as a result of urban sprawl, accounting for longer commuting time, Côté (2001) implies that this trend may be reversing, with a gradual expansion of the world, leaving people with less time to socialise. Investment in better infrastructure and community oriented designs are cited as a means of preventing this reversal (Côté, 2001).

Jacobs *et al* (1997, p.14) assert that "development occurs when the subconscious preparedness of society leads to generate new ideas and conscious initiatives by individuals." They claim that societies that are fully consumed with the struggle for survival have little time or inclination to observe what other societies are accomplishing. Hence, development proceeds rapidly in areas where society becomes aware of opportunities and challenges and has the will to respond to them (Jacobs *et al*, 1997). Improvements in communication and transportation in the Twentieth Century have facilitated this increased awareness.

From this debate it would seem that means of communication (physical mobility and telecommunications) are paramount in raising a level of 'awareness' that will bring about a creative movement for change and development. Field experience tends to confirm that in areas of isolation, and where the mechanisms for raising awareness are stunted, the process of acceleration can be halted (see the Zambia, Cameroon and Kenya case studies in Chapters 4, 5 and 7). This is so in Sub-Saharan Africa, where the spatial distribution of population and infrastructure is concentrated in mostly primate cities[78] (for example Lusaka in Zambia). This urban bias of capital resources, labour, and

[78] A primate city is defined as a country's leading city (economically, culturally and politically) disproportionately larger than the next largest ones in the country's city size distribution. The law of the primate city was first established by Geographer Mark Jefferson in 1939 (About, 2004).

infrastructure concentrated in the capital city, leaves the poorer, marginalised extremities without the wherewithal to accelerate development.

One might argue that notions of social capital are implicit in the process of development. In the hierarchy of needs, physical survival, security, and comfort are primary, with social and mental needs gaining prominence when the basic physical needs are met (Cleveland *et al*, 1999).

Arguably, 'development' was conceived in terms of a set of desirable results – higher incomes, longer life expectancy, lower infant mortality, improved education. The emphasis has shifted from the results of development to the enabling conditions, strategies and public policies, including peace, democracy, social freedoms, equal access, institutions, markets, infrastructure, education and technology, for achieving those results (Jacobs and Cleveland, 1999). In their words, "development strategy should aim to release people`s initiative, not to substitute for it" (Jacobs and Cleveland, 1999, p.23).

Jacobs *et al* (1997) claim that in parallel to the development process, there must be a motive force that drives social change, some essential preconditions for that change to occur, barriers that obstruct the process, capital and technology resources which contribute to the process, and the infrastructure to support it. Jacobs *et al* (1997) describe *organisation* as being a central characteristic to the development process. "The essential nature of the process is the progressive development of social organisations and institutions that harness and direct the social energies for higher levels of accomplishment. Society develops by organising all the knowledge, human energies and material resources at its disposal to fulfil its aspirations" (Jacobs *et al*, 1997, p.10).

The theory of organisation in the context of social development is discussed next.

8.1.2 Organisational theory

Organisational theory is concerned with the structure, functioning and performance of organisations and the behaviour of individuals and groups of people in organisations (COTCOS, no date).

An organisation can be considered a formal structure, comprising a group of individuals under some form of management, to function continuously and carry out different tasks in order to achieve a pre-established common goal (Sycamnias, 1999). According to Sycamnias (1999), this goal can take the form of a product or service and is what the organisation is ultimately created to produce.

Arguably, social capital networks provide the requisite format for an organisation. Robert Putnam (1993, 2000) for example, views social capital in the form of organisations in civil society, such as sports clubs, bowling leagues, and political clubs. Similarly, Fukuyama (2000) illustrates how religion can be conceived of as social capital, and that Christianity, for instance, has the prerequisites to be considered an organisation. Furthermore, the definition of social capital networks emerging from the case studies, for example revolving funds ('merry-go-round' and 'harambee') and informal associations ('jua-kali') as found in Kenya, also fulfil the requirements of an organisation.

The Structure and Management of Organisations

In order to examine different schools of thought on the structure of organisations, a review of some eminent theorists, and their contributions to organisational theory is included here (adapted from Pugh and Hickson, 2000):

Max Weber

Weber's contribution to the study of organisations was his theory of authority structures which led him to characterise organisations in terms of the authority relations within them. Weber distinguished between organisational types according to the way in which authority is legitimised, outlining three types of organisation which he labelled:

1. Charismatic: exercising authority based on the personal qualities of the leader. This is a political leader for example, whose organisation consists of a set of disciples that mediate between the leader and the masses.
2. Traditional: the bases of order and authority in traditional organisations are precedent and usage. This type of organisation can take the *patrimonial* form where officials are personal servants dependent on the leader for remuneration; and *feudal* form, where officials have more autonomy and sources of income, with a traditional relationship of loyalty.

3. Rational-legal: taking the form of a bureaucracy, the dominant institution of modern society. This system is 'rational' because the means are expressly designed to achieve certain specific goals and 'legal' because authority is exercised by means of a system of rules and procedures. Weber states that a bureaucratic organisation is technically the most efficient form of organisation possible (in spite of it commonly being synonymous with inefficiency). He viewed bureaucracy as the rational product of social engineering.

Pugh and Hickson (2000) report that most studies of formal, structural characteristics of organisations over the past three decades have started from the work of Max Weber, having made the first attempt to produce systematic categories for organisational analysis.

Pugh and Hickson

The Aston Group, comprising generations of researchers including Pugh and Hickson contributed to organisation theory by blending some of the research methods and assumptions of psychology with conceptions of organisations and their workings from sociology and economics. The Aston Programme (Pugh, 1998) aimed to link the following:

1. Organisational structure and functioning
2. Group composition and interaction
3. Individual personality and behaviour

Hickson *et al* (1971) (in Pugh and Hickson, 2000, p.19) stated that "relationships between the structural characteristics of work organisations and variables of organisation context will be stable across societies." He drew attention to some crucial features of organisations and their managers:

- Wherever in the world they may be, there will be consistent constraints in the structural features that characterise organisations
- They must expect differing patterns of influence in different organisations
- They will be able to recognise what is going on when big decisions are made in organisations other than their own; a similarly complex and political matter is likely to engender much the same progress wherever it occurs.

Karl Weick

Weick views organisations as 'sensemaking systems,' which incessantly create and recreate conceptions of themselves and of all around them that seem sensible and stable enough to be manageable. The impact of the enacted nature of organisational sensemaking can be given by an examination of crisis situations. These are so complex that the enactments[79] of the individuals involved will inevitably be partial, and their interactions may well exacerbate the crisis (Weick, 1988).

Weick (1989) introduced the concept of 'coupling' into organisational theory, stating that whatever the form of the organisation, some of its elements will be tightly coupled together while the coupling of others will be comparatively loose. He believed that:

> "…organisation theory was beginning to portray the elements in organisations as tied together more determinately than in fact they were… this distortion was crucial because it reified organisations and portrayed them as more unified, stable and responsive than they were" (Weick, 1989, p.14).

According to Weick (1989) 'loose coupling' facilitates adaptation in an organisation because change in different parts and activities of a loosely coupled organisation will have little effect on other parts and activities of the same organisation.

The concept of linkages and coupling in organisational theory can be applied to the subject of the thesis - that being the linkages between the transport sector and social mobility, and the degree to which these two entities are 'coupled'.

Put simply, Weick's theory of coupling is used to describe the relationship between two separate, but responsive organisations. 'Loose coupling' is the relationship between different 'parts' organisations. In organisations, 'de-coupling' refers to a separation of connection between two organisational elements (Weick, 1976; 1982; 1989).

[79] The term 'enactment' is used to explain that when people act, they bring events and structures into existence and set them in motion (Weick, 1988).

In their 'reconceptualisation' of loosely coupled systems, Orton and Weick (1990) state that institutional theory could be extended by recognising openness, connectedness, responsiveness and distinctiveness. Further, they suggest that building on the premise of a dialectic interpretation that looseness relating to some dimensions of the symbolic display of formal structure should be complemented by coupling instrumental work processes with these displays along other dimensions.

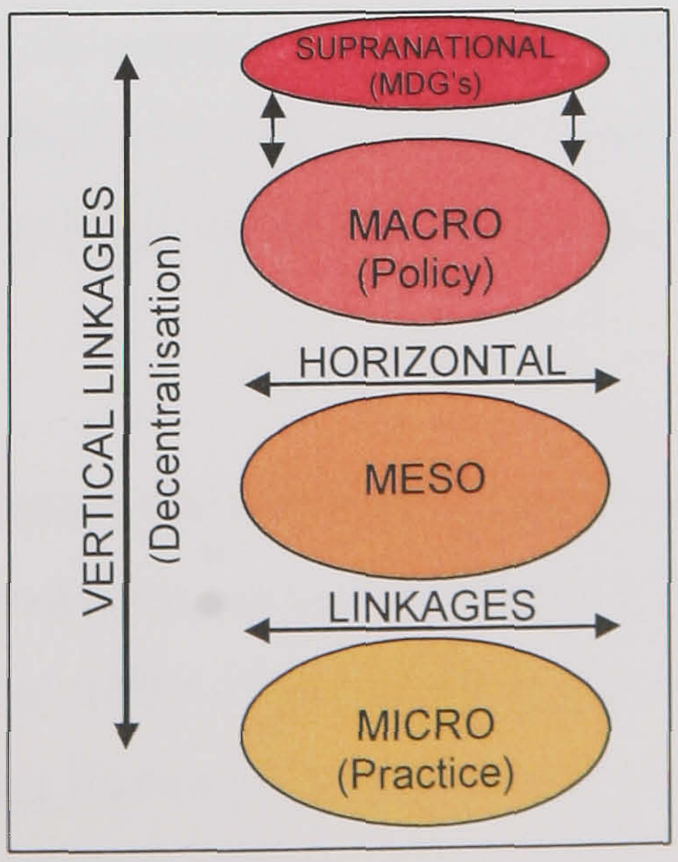
Hoyle (1982) explains that organisations are not 'objects' but social constructs. In reviewing literature on organisational theory and associated concepts of loose coupling as part of a wider 'social architecture', one can begin to construct linkages between aspects of the current development paradigm that this research is based. For instance, the degree to which the relationships between social capital, sustainable livelihoods, accessibility, mobility and transport are loosely coupled. The next section on Social Development and Organisations examines this perspective more closely.

Social Development and Organisations

According to Jacobs *et al* (1997, p.22) the development of organisation in society takes place "both in the horizontal and vertical plane… The horizontal expansion of organisation increases its reach and extends its access. The vertical elevation of organisation raises its skills, efficiency and productivity."

There are horizontal and vertical linkages at the macro, meso and micro level of organisations in development, illustrated in Figure 8.2.

Figure 8.2: Theoretical perspectives in developmental processes



The emphasis of development theory on social organisations and institutions is certainly not new. Morris and Adelman (1988) identified five major categories of development theory that recognise the central role of institutional changes in development:

1. Development optimists: classical and neo-classical theory
2. Alternative visions of Nineteenth Century capitalism
3. Comparative economic history – conditions for successful industrialisation
4. Development pessimists: dependency theory
5. Underdevelopment: abundant agricultural resources and dependency

Jacobs *et al* (1997) recognise society as a developing organisation of activities. They consider a crucial determinant of social productivity as being society's capacity for co-ordinated, systematic functioning. The structure and determinants of organisations will now be explored.

Determinants of Organisational Structure

An organisation's structure is the framework whereby the final desired goal can be achieved and is said to have three major components (Sycamnias, 1999):

1. Complexity: determined by the amount of aims the organisation has. An organisation with fewer goals will not need as much specialisation, or a high level of management hierarchy. Complexity is dependent on technologies, organisational size and dispersion.
2. Formalisation: the amount of rules an organisation will have and its reliance on these rules and procedures to direct behaviour, usually proportional to the size of the organisation.
3. Centralisation: a way to consider where the decision making powers within an organisation will develop from. Decisions in highly centralised organisations are made from the highest level of management, and all orders flow down to other members.

In a decentralised organisation, the authority to make decisions is more wide spread to all levels of management, which means more interaction, and less of a dictatorship style of management (Sycamnias, 1999). The external environment can effect organisational structures, for instance price fluctuations, economies, laws etc that tend to be outside the organisations control (Sycamnias, 1999).

Pugh *et al* (1968, p.76) define centralisation as the "locus of authority" to make decisions affecting an organisation that forms one of the structural variables of bureaucracy. Weick (1976) suggests that decentralisation is a form of loose coupling. Porter (2002) highlights the importance of state decentralisation in providing much needed financial assistance to village representatives, local administrators and extension workers who are working on the front line against poverty. In order to encourage state-civil society links thereby reducing the isolation and invisibility of off-road populations, Porter (2002) suggests that a policy environment is required to support interactions between these intermediaries and the poor in off-road locations.

However, Porter (2002, p.297) also warns that since decentralisation programmes now in place in many African countries have succeeded in devolving power down to local administrative headquarters, contact between local government and off-road villagers remains minimal and "opportunities for lobbying extremely rare". Worse still, in Ghana, Ayee (1996) (in Porter, 2002, p.292) reports that "decentralisation may help to augment the dominance of those who, because of wealth or status, are already powerful at the local level."

Jacobs *et al* (1997) highlight that the role of government as creator and manager of organisations can have a great impact on development as long as their efforts lead to a multiplication of social organisations and social initiative by the private sector as well.

Each level of development requires the establishment of an essential infrastructure to support it (Jacobs *et al*, 1997). The term infrastructure is commonly used to refer to the physical infrastructure of roads, ports, railways and electric power that support economic activity. Jacobs *et al* (1997) give an extended meaning to the term by including three other levels of infrastructure – social, mental and psychological, that are necessary for further development achievements:

- Social infrastructure consists of the laws, systems, administrative, commercial, productive and financial organisations
- Mental infrastructure includes availability of information, level of education and awareness in society
- Psychological infrastructure consists of the collective social energy, aspirations, attitudes and values that make society responsive to opportunities.

Jacobs *et al* (1997) describe the enormous increases in population (12-fold population growth in the last 300 years) and income that have been made possible by advances in the organisation of society around urban centres. They attribute growth of these urban centres on advances in the physical organisation of the settlement, with roads being laid, bridges built and markets constructed. This physical infrastructure enabled towns to grow into larger urban centres and these densely populated areas where people, capital and knowledge accumulated became powerful engines for development (Jacobs *et al*, 1997).

This same process of accelerated development has seen countries of Africa expand rapidly, with urbanisation increasing dramatically (UNCHS, 1996; Mitlin and Satterthwaite, 2001). However, most Sub-Saharan countries remain predominantly rural (the case study countries of Zambia, Cameroon and Kenya being cases in point, with 65%, 52% and 75% of their respective populations living in rural areas). Hence, it would seem that there remains a significant disparity between the development, organisation and associated 'awareness' of urban centres, than of rural settlements that are characteristically spatially dispersed, with poor communication links.

Historically, poor roads in 17th Century Europe retarded industrial invention, with there being little incentive to increase production as long as the expansion of the market was hindered by poor transportation (Jacobs *et al*, 1997). Arguably, present day Africa is experiencing similar levels of impediment with regard to productive capacity, as in Europe 400 years ago.[80] Transportation networks continue to be degraded, and many governments lack the institutional capacity and financial capability to prevent further dilapidation of road networks, let alone make any significant improvements to them. Field experience has confirmed that the link between farm and market is severely hampered in rural areas by the poor road infrastructure and absence of means of transport to evacuate produce. Hence there remains a lack of incentive to increase productivity when there is no means for the crops to be stored or sold.

It has already been established by Jacobs *et al* (1997, 1999, 2000) that development is the upward directional movement of society from lesser to greater levels of energy, efficiency, quality, productivity, complexity, creativity and accomplishment. Arguably,

[80] Europe experienced very fast step changes in transport, from tracks to canals to macadam roads. In Africa there are slower step changes in transport, and there are smaller variations in product prices due to transport (personal communication with John Hine, Ethiopian Roads Authority, 8 July 2004).

higher levels of these attributes are resultant from higher levels of organisation in society (Jacobs *et al*, 1997).

Perhaps the 'directional movement of society' in Sub-Saharan Africa would experience greater levels of accomplishment if the organisation of governance, coupled with macro policy and micro practice in sectors that contribute to access, communication, good health, knowledge, awareness, and production were to be improved. Yet, evidence from the literature review (Chapter 2) and case studies (Chapters 4, 5 and 7) suggest that 'organisation' remains overtly sectoral, despite efforts to promote a more cross-sectoral and holistic approach to development using Sustainable Livelihoods Approaches.

The next sub-section considers contingency theory and implications for crisis management.

Contingency Theory and Crisis Management

Contingency theory supports the notion that organisations are open systems that adapt to their environment, through diagnosis of organisational-environment compatibility (Morgan, 1997). However, in organisations the degree of internal harmony and fit with the environment is a product of human decision, action and inaction so that conflict is often the rule (Morgan, 1997).

Contemporary theorists (Morgan, 1997; Kast and Rosenzweig, 1973) believe that there is no one best way to organise, rather they support the notion of contingency theory, which places emphasis on there being a best fit between an organisation's structure, size, technology and the requirements of its environment (Borgatti, 1996).

Organisations actively adapt to their environments. Well-established organisations have power that is a function of asymmetric mutual dependence, where dependence is a function of the availability of alternative supply (A depends on B to the extent that there are few alternatives to B that are available to A) (Borgatti, 1996). This relationship is likened to that of the farmers group to which Joseph Njenga belonged in Kenya (see Box 7.1, Chapter 7), where even after the 'organisation' was disbanded, Joseph continued to have a reciprocal arrangement with neighbouring farmers, involving the loan of produce to raise financial capital. Hence, demonstrating that in the context of an organisation entrenched by social capital where there are few relationships of power that

the mutual dependence described above can still exist. In this case, there were few alternatives open to Joseph other than his immediate neighbours, given his rural and somewhat isolated location.

An important dimension of social capital is the mutual knowledge and trust between known buyers and sellers that do not operate through banks, or with credit cards and recognised technical standards. In Ethiopia, traders remain 'small' partly because of limited knowledge and trust.[81]

Crises are characterised by Weick (1988) as low probability/high consequence events that threaten the most fundamental goals of an organisation. Weick (1988) understood that the less adequate the 'sensemaking' process directed at a crisis, the more likely it is that the crisis will get out of control, and action can exacerbate crisis if there is lack of awareness.

In crisis management, Weick (1988) introduces the concept of enactment, used to explain that when people act, they bring events and structures into existence and set them in motion. People who act in organisations often produce structures, constraints and opportunities that were not there before they took action, hence crisis management refers to quick action that deflects a triggering event (Weick, 1988, p.316):

> "The activity of crisis management, viewed through the lens of enactment, involves such things as managing crises to lower levels of intensity, increasing skill levels and heightening… awareness… in the interest of expanded perception (and) appreciation of the ways in which small interventions can amplify…"

In a developing world context, one might consider that the actions of the wealthy and powerful (in particular government institutions) exacerbate vulnerability in the event of a crisis with short sighted decision making, and mismanagement of resources. Crisis management is often triggered by poor communities themselves when faced with a vulnerable situation such as impending crop failure or famine. The field surveys indicate that livelihood strategies are often employed at the household level, in a more consciously organised fashion by social networks and associations to avoid the

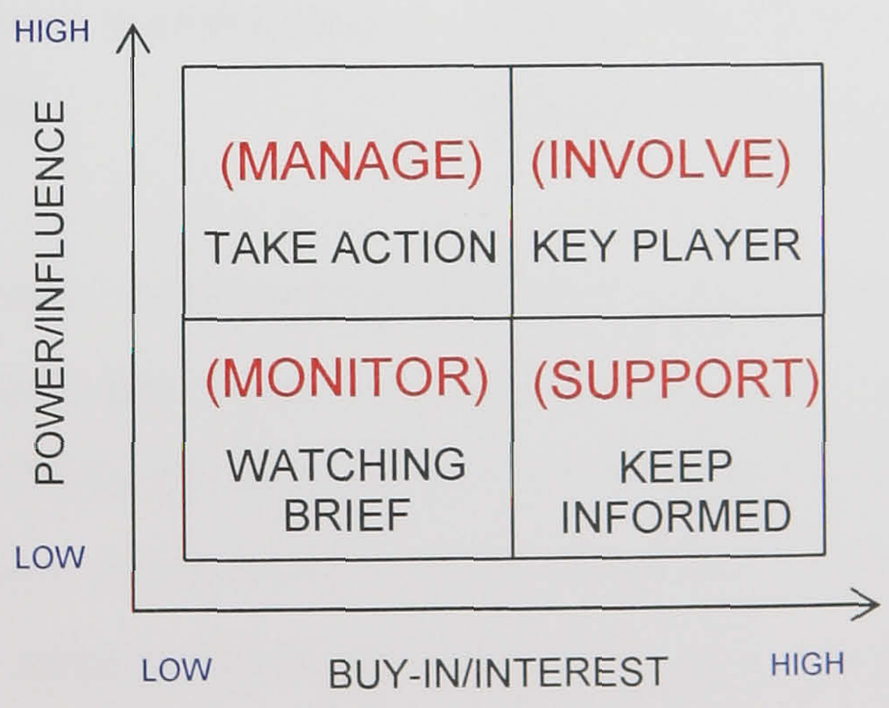
[81] Personal communication with John Hine, Ethiopian Roads Authority, 8 July 2004.

incidence of adverse situations or by limiting their impact (for example substituting assets to bolster capital that is in short supply).

The case studies reveal that risk minimising strategies are continuously adopted by the rural poor, and often in advance of external assistance materialising. Nevertheless, when faced with periods of adverse risk that cannot be adequately contained by local support from social networks, rural communities may require a mechanism for signalling their vulnerability to the government and development practitioners. Arguably, such mechanisms are currently ineffective or absent in Sub-Saharan Africa.

Stakeholders contribute to or are affected by a project or programme's performance (Laws *et al*, 2003). Stakeholders are defined by a person or group of people who have a vested interest in, or who can influence the success of a development project and the environment in which it operates (DFID, 2001b). DFID (2001b) defines primary stakeholders as those that are directly affected by an activity (the desired beneficiaries of a project and the implementing agencies), and secondary stakeholders who are indirectly affected by the activity (non-beneficiaries, such as irregular road users). DFID promotes stakeholder analysis to help identify all stakeholders involved and to manage their needs and expectations (see Figure 8.3).

Figure 8.3: Stakeholder analysis diagram



Source: PM Professional Learning (2002)

The principle of stakeholder analysis is that different stakeholder groups are managed according to their level of influence on the project outcomes (PM Professional Learning, 2002). Hence, key players are those with a high level of influence and high interest in the project, while stakeholders that appear to have low influence and power

require continuous monitoring in case they oppose any project objectives (PM Professional Learning, 2002). These might include pressure groups or NGOs whose influence can grow and become a potential threat. Based on Figure 8.3, the direct beneficiaries (the chronic poor for example) arguably have a high interest because they can fall victim to the externalities and adverse consequences of top-down projects.

According to Borgatti (1996) when stakeholders are 'unconnected', they cannot easily co-ordinate their efforts, and so have trouble controlling the organisation (see Figure 8.4). In contrast, when stakeholders are 'well-connected' (as in Figure 8.5), the bonds among the stakeholders can be closer than the bonds with the organisation, and hence they are unlikely to act in ways that negatively affect other stakeholders (Borgatti, 1996).

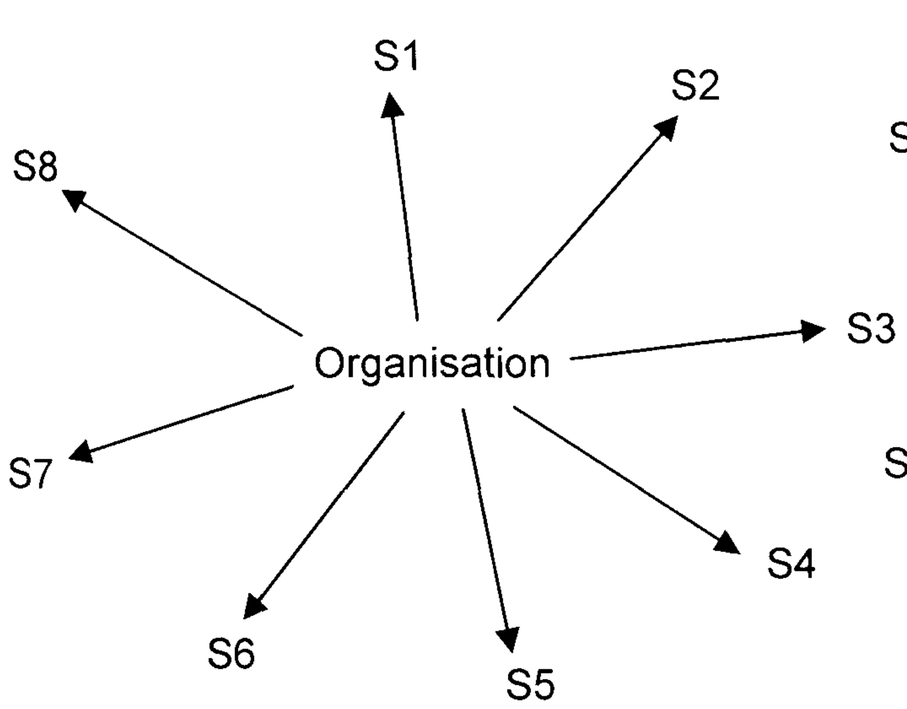


Figure 8.4: Unconnected stakeholders

Source: Borgatti (1996)

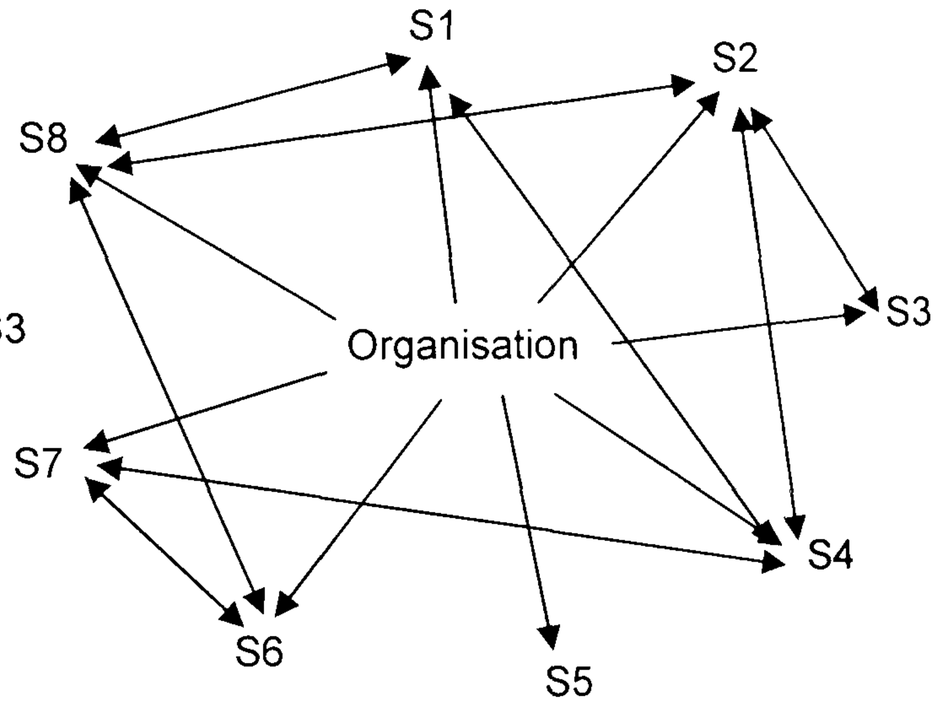


Figure 8.5: Well-connected stakeholders

Source: Borgatti (1996)

In much the same way, communities that are heterogeneous in structure can be considered unconnected, and hence the community (as an organisation) cannot co-ordinate their efforts effectively (see reference to Ekondo Beach in Section 5.5, Chapter 5). While homogeneous communities can be considered well connected and display closer bonds, and are more predisposed to the formation of networks and maintenance of social capital.

Section 8.1.3 considers the third established theory that has been operating in parallel with this research.

8.1.3 Systems approaches theory

A system is an entity which maintains its existence through the mutual interaction of its parts, the emphasis being 'mutual interaction', in that something is occurring between the parts, over time, which maintains the system (Bellinger, 2004).

Isolated, Open and Closed Systems

Systems may be characterised as either closed or open. Bellinger (2004) describes a closed system as one that does not need to interact with its environment to maintain its existence. Open systems he describes as organic that must interact with their environment in order to maintain their existence. People can be considered open systems in that they interact with their environment in order to take in food, water, and obtain shelter, and provide waste products to the environment in return (Bellinger, 2004).

Organisations also derive power from systems, which Jacobs *et al* (1997) term the skills of society. Open systems theory emphasises the importance of the environment in which organisations exist (Bellinger, 2004). Morgan (1997) explains that, as highlighted in the principles of contingency theory, it is important for organisations to:

- Scan and sense changes in contextual environments
- Bridge and manage critical boundaries and areas of interdependence
- Develop appropriate operational and strategic responses.

Organisations can be viewed as sets of activity systems interacting with the environment but linked at various levels by co-ordinating systems (Handy, 1985). Traditional systems theorists adopt four types of systems (Handy, 1985):

1. Adaptive systems: concerned with fitting the organisation into its environment, shaping its future and deciding its policies
2. Operating systems: concerned with the daily existence of the organisation, the intake, processing and production of its materials – the logistics of the process of work
3. Maintenance systems: working to keep the organisation in a healthy and effective condition, the linking mechanisms between sections of the organisation and differing types of systems

4. Information systems: the nerves of the organisation, without which none of the systems would function.

Handy (1985) states that if the systems or organisations are to work well, the information must be well communicated. Handy (1985) considers that one general law of communication is that we never communicate as effectively as we think we do due to the following:

- Perpetual bias by the receiver: we only hear or perceive what we are ready to hear or receive
- Omission or distortion by the sender: when the sender contaminates or leaves out items in the message
- Lack of trust: when there is a lack of trust we are careful to screen information
- Non-verbal obliterates the verbal: the emotional overtones of a communication may distort the reception of the data
- Overload: too much information resulting in communication confusion
- Information secretion: the use of position power to garner and secrete information instead of sharing it
- Distance: the further away one is, the less one communicates
- Relative status: individuals with low perceived status have difficulty in initiating communication with those of superior status
- Immediacy: the more immediate communication drives out the less immediate
- Tactic of conflict: Information withholding or distortion is a common tactic in organisational conflict – conflict often leads to a break in communications
- Lack of clarity: what is obvious to the sender is obscure to the recipient.

Referring back to rural communities in Sub-Saharan Africa, communication can be considered as vital to many facets of their development including:

- Maintenance of vertical linkages between macro, meso and micro levels of 'organisation' (see Figure 8.2)
- Two-way decision making and knowledge transfer between macro level policy makers and community representatives at the grassroots
- Cross-sectoral communication in the interests of service delivery and sustainability of capital assets
- Communication between unlikely 'partners' for needs identification and influencing investment decisions (take for example the reciprocal relationship between social capital networks and transport mobility given in this research)

- Poor households signalling their vulnerability during periods of high risk

In his discussion on the system of organisations, Handy (1985) provides some recommendations for maintaining effective communication:

1. Use more than one communications net e.g. hierarchical, status group, friendship group – use of informal nets prepares the ground and substantially improves retention levels. *In the study areas of Kenya, all the informants were found to be members of more than one social group or association.*
2. Encourage two-way rather than one-way communication. In two-way communication, the recipient is encouraged to intervene in the message to get clarification – this method substantially improves comprehension and retention. *Government extension services, NGOs and CBOs in Africa are increasingly adopting the use of participatory approaches to facilitate two-way communication, enabling local communities to take part in the decision making process.*
3. Keep the linkages in the communication chain as few as possible – the more people in the chain, the more possibilities of distortion. *Decentralisation can improve vertical and horizontal communication, but is still in its infancy in many developing African nations, hence there remains a query over the efficiency of resource allocation using this method (World Bank, 2003b).*

This section has drawn on the theoretical approaches that have steered the direction of research into relationships between social capital, mobility, transport and sustainable livelihoods. Section 8.2 intends to reframe transport development approaches within the international development agenda, using social capital as an instrument for improving communication and organisation of the rural poor, drawing on both secondary literature and primary case study data. It examines why the social capital argument is important for justifying transport service and road infrastructure investment in rural areas.

8.2 Implications for Social Capital and Mobility

"Successful development transformation affects not only what we do, but also how we do it... in the end, successful development must come from within the country itself, and to accomplish this, it must have institutions and leadership to catalyse, absorb and manage the process of change, and the changed society" (Stiglitz, 1998, p.32).

In his review of technical co-operation as a means towards a 'normative framework', Malik (2002) states that development strategies, of which capacity development is a part, must aim to facilitate the transformation of society by identifying barriers and catalysts for change. The explanations of growth and development through the 'production function'[82] by Schultz (1971) and Becker (1964, 1977), have strongly influenced development policies, enforcing the notion that development is intrinsically a technical problem requiring technical solutions, such as increasing capital stock, better resource allocation and preventing market failures (Stiglitz, 1998).

Malik (2002) emphasises the need for a broader view of development to contemporise explanations of development by understanding better how societies work, how societal forces interact with each other, and how they help or hinder development progress. More recently, sociologists and political scientists (notably Woolcock, 1998) have introduced the concept of social capital as a means of understanding the relationships between society and production systems. Hence, as Malik (2002, p.25) exclaims "the policy conclusion becomes an obvious one: nurture and strengthen social capital, which requires understanding how social relations are structured and how they can be leveraged for purposes of development."

Stiglitz (1998) highlights that traditional societies may have high levels of organisational and social capital, though not necessarily in a form that enables change (see also Table 2.2, Chapter 2). One might argue that the donor community have used 'social capital' as a label to help them explain and understand social interaction within developing country communities (as indicated in Chapters 2 and 7). However, notions of social 'exclusion' and 'inclusion' are already being addressed by government policy in developed countries.

One of the most effective ways for the state to positively influence social capital might be to reduce the incidence of exclusionary practices, for example by improving service delivery. The UK's Office of the Deputy Prime Minister has a dedicated Social Exclusion Unit, set up in 1997 that undertakes research to seek solutions for preventing social exclusion. In the UK, social exclusion is characterised by unemployment, poor skills, low incomes, poor housing and high crime. The purpose of the Social Exclusion

[82] The 'production function' can be defined as a relationship that shows the quantity of output for any given amount of input (Wiley, no date).

Unit is to mainstream service delivery for everyone, targeting children and young people, the homeless, and neighbourhood renewal (Social Exclusion Unit, 2004).

Similarly, the UK Department for Transport's Mobility and Inclusion Unit promotes socially inclusive transport, examining the links between transport and social exclusion. The unit analyses the transport needs of different social groups, and liaises with other government departments on issues of access for disabled people, crime and public transport and understanding the transport requirements of the young, elderly, women, and ethnic and faith minorities (Department for Transport, 2004).

Evidence from the literature (Chapter 2) and case studies (Chapter 7) suggest that in developing countries, the state can improve public service delivery through outreach programmes and setting up schools and health clinics in remote rural areas. Alternatively, the state can invest in the organisational capacities of the poor and help them build 'bonds and bridges' (Narayan, 1999) with other social groups using participatory approaches and through NGOs. Nevertheless, the problem remains, that in order for both these approaches to work effectively and sustainably, the poor must be able to *access* services and social groups. Arguably, if poor people cannot physically benefit from the provision of human and social capital by the state or external agencies, the quality and capacity of that capital to enhance development is immaterial.

Indeed, Edwards (2000) suggests that technical co-operation should incorporate indigenous viewpoints about how civil society and social relations are structured, and focus on creating an enabling environment for social capital formation by strengthening legal, regulatory and fiscal frameworks. Hooghe and Stolle (2003) suggest that the *generation* of social capital, which they argue is one of the most important policy issues in social capital theory, has all but been neglected in most of the existing research on the subject.

In a recent volume of Development in Practice, a number of articles have brought together some of these issues of generating social capital networks through use of NGOs. In Guatemala, Abom (2004, p.342) reports that "stocks of social capital and strong norms of social organising and community and civic engagement have not been part of the general landscape" due to political unrest and civil war. 'Bridging' social capital is said to exist among wider and more general social networks in the form of NGOs, yet they have been accused of blocking social capital by contributing to people's

dependence on external organisations that help them meet their short term needs (Marysse, 1998). Northern funded NGOs can minimise social capital building processes due to their top-down values, and themselves become a barrier to more fundamental structural change (Rahman, 1995).

In Guatemala, civic participation is shown to be very low, with *fear* featuring as a key factor for low uptake in social organisation in Abom's (2004) case study, as a result of previous experiences causing a loss of confidence in collective action. Other obstacles to 'buy-in' of social capital cited by participants in the study were cultural obstacles and gender discrimination (in particular machismo), with husbands preventing their wives from participating in activities outside the home (Abom, 2004). On reflection, it would appear that the NGOs reviewed in the study were able to build social capital and associated trust between themselves and their beneficiaries, and that NGO initiated community groups have the potential to catalyse social capital formation from the bottom-up.

A similar study of NGOs in Bolivia (Rodriguez-Carmona, 2004), reflects the need to review organisational learning and social capital together. Although some practitioners consider NGOs to be conducive to social demobilisation (Petras, 1997), others highlight the broadening of the "precious little social capital found in many rural areas" (Rodriguez-Carmona, 2004, p.356). Rodriguez-Carmona's (2004) Villa Serrano study concluded that NGOs often focus their support on grassroots organisations that frequently lack the minimum conditions required to work effectively. While informants in the Guatemalan study described NGOs taking away enthusiasm for communities to organise themselves and hence creating an environment of dependency (Abom, 2004).

An area of consensus between these two authors is that a key role for NGOs to encourage social capital in poor communities, is to mediate between the community and state, in order to give poor people a voice, and to raise awareness of development issues through inter-sectoral co-operation (Abom, 2004).

Referring back for a moment to social capital and linkages with organisational theory, Fukuyama (2000, p.3) describes social capital as an "instantiated informal norm that promotes co-operation between individuals" stating *awareness* of social capital as being critical for understanding development. Further, he claims that in the absence of civil society, the state often needs to step in to organise individuals who are incapable of

organising themselves (Fukuyama, 2000). This supposition is highly contentious, particularly since Fukuyama, in his research of the development literature, has found social capital to be regarded as a liability rather than an asset (refer to Table 2.2 in Chapter 2 for a list of positive and negative outcomes of social capital).

Villages included in the Zambia, Cameroon and Kenya case studies were mostly found to have strategies at the household level for improving livelihoods through asset substitution, in the absence of state support for collective action and credit acquisition. Social capital networks appear to be an implicit aspect of village level relationships, often presented in a well organised structure that can be mobilised in the pursuit of a common goal, an example being community road maintenance. Woolcock and Narayan (2000) support this counter-argument that when citizens are deprived of services and benefits, informal networks substitute for the failed state and form the basis of coping strategies.

Indeed, Porter (2002) makes note of the fact that community approaches are favoured by donors and NGOs in Africa as a means of providing services *because* of the withdrawal of public sector service support following the structural adjustment programme of the 1980s and 1990s. In fact, following a study of labour groups in Ghana, Lyon (2000) (in Porter, 2002, p.296) suggests that successful community groups are those that were "established by their own initiative, evolved slowly, and allowed individual members to identify their own objectives and manage their own income." This would also seem to be the case in the revolving funds, harambees and jua-kali found in the Lari, Limuru, Mwea, Kalama and Magadi Divisions of Kenya.

However, one should not lose sight of the fact that social capital is in part characterised by reciprocal trust, and there are many instances where selection of labour for community based programmes has been influenced by issues of trust. Molenaers (2003, p.120) cites an example in Nicaragua, where local leaders received trust from contractors to select community members for carrying out local works:

> "I pick the people I know best, the people I can trust. I cannot assume responsibility for people I don't know, because if they screw up, then the organisation will blame me for it and I will lose the connection."

Social capital is therefore also conceived and utilised as an instrument to mobilise resources. In Ghana's Central Region, Porter also cites the maintenance of roads and

paths in the community by women and men who carry sand, gravel and stones to the potholes, and fill and level the potholes using shovels and pickaxes respectively, as a feature of social capital (Porter, 2002). Every able-bodied inhabitant is expected to participate when the roads need attention during the wet season and fines are often imposed if people do not contribute (Porter, 2002).

There is evidence of hostile social groups, whose solidarity produces negative externalities[83] for the society in which they are embedded (take for example the Ku Klux Klan or Mafia - Fukuyama, 2000). In the African case, social capital can mostly be considered a positive common resource (although mafias and monopolistic organisations also exist in Africa). As such, there is growing emphasis on the potential for strengthening existing local social capital (Porter, 2002).

So then, what are the implications of social capital strengthening for a reduction in vulnerability and poverty? And how do mobility issues alter the structures, processes and relationships of communities by shifting the alignment of existing social practices and hence bringing 'chaos' into the normative structure?

Rogaly *et al* (2004) wrote a poignant account of 'Building Assets to Reduce Vulnerability' in Mexico that reviews the effectiveness of the Proyecto Tequisquiapan (PT), a membership based organisation established in the State of Querétaro in 1983. The PT organisation is aimed at strengthening individual and collective capability to cope with insecure livelihoods, and emphasises protection and asset building, as opposed to income growth (Rogaly *et al*, 2004). The PT is a microfinance organisation, where social collateral is used to enforce repayment, and the study demonstrated the positive role of flexible open access savings facilities for protection against vulnerability to crises and to build assets (Rogaly *et al*, 2004).

Rogaly *et al* (2004) reported that there was an alteration to the gendered household dynamics as a result of the PT, with women playing a key role in maintaining the household budget, and allocating it between household expenses (food, healthcare, education, transport fees, and money for their husbands). An increasing number of women also undertake paid work outside the home in business, petty trading, and formal employment (Rogaly *et al*, 2004).

[83] Fukuyama (2000) refers to the negative externality resulting from some group affiliations as the 'radius of distrust'.

The impact of social capital on women was the subject of an article by Silvey and Elmhirst (2003) who studied the impact of Indonesia's economic crisis during 1997 to 1999 and resulting social capital formation, on women migrating to and from the study areas of Tangerang and Makassar. The authors describe how social capital can exacerbate gender inequality where women are excluded from powerful networks of trust and reciprocity. The premise of the study is that migrants can provide and exchange social and economic support through rural-urban networks, and yet the migration of young women to urban settlements for employment opportunities actually resulted in placing unwelcome claims on the labour and remittances of the women (Silvey and Elmhirst, 2003). For instance, the long hours that the women worked in the factories (10-12 hours, 6-7 days a week), prohibited them from pursuing social relations outside their immediate peer and kin networks (Silvey and Elmhirst, 2003).

On the specific impact of road construction on women's trade, Porter (1995) demonstrates the mobility restrictions experienced by women in the Jos Plateau and Borno regions of Nigeria, and the effects on the maintenance of local trading networks that are themselves a mechanism for social capital formation. The roadside market at Vom Junction for example, was established by women from a nearby off-road settlement as a market for locally produced vegetables (Porter, 1995). It would seem from Porter's account that the social network was strong, with the traders having built lockable stores and employing a night watchman. The market association had a chairman and secretary, and a substantial proportion of members were women. This empirical example shows how the impact of greater mobility and accessibility on women has the potential to develop gender relations in these settlements (Porter, 1995).

Nevertheless, Porter (1995) also highlights that road construction of district roads can leave off road settlements and their markets being isolated and *more* neglected than before the transport intervention. Furthermore, she cites cases in Borno where whole settlements have reorganised and migrated to roadside locations, hence encouraging the demise of off-road markets. It is not surprising that improvements in road infrastructure cause market associations to re-think their locational strategy, given that traders and transporters are dissuaded from travelling off-road because of vehicle operating costs.

Evidently, once markets have established themselves on the paved road, there is little incentive for these same traders to travel further afield when agricultural produce can be purchased at the roadside (Porter, 1995). The result being that bush village markets

either disappear completely, through decline in custom or from migration to the roadside, or the local communities mobilise themselves to maintain the feeder roads and structures, as attempted in Borno. Nevertheless, Porter (1995) points out that due to a lack of equipment and materials, collective action for road maintenance has had little impact on the general trend in market decline.

The degree of accessibility available to women is shown to have quite surprising impacts on their levels of social capital. Take for example Abom (2004) who gives an example in Guatemala, where the introduction of piped water in the community has impacted on the maintenance of social capital because it discourages women from interacting outside the home, for instance walking to a local washing area and meeting with other women.

Arguably, the transport burden of women, including water and firewood collection, travel to the grinding mill, farming and marketing activities, can also lead to a break down in social capital. The time spent undertaking these activities can result in less time in the community and for commitment to social groups and associations. Decision-makers would be advised to consider these complex dynamics related to community level mobility and social relations, and provide policy solutions that maintain a balance of accessibility improvements without compromising elements of civic participation.

Morduch and Sharma (2002) agree that helping to reduce vulnerability poses a new set of challenges for public policy, in particular determining an appropriate role for public action. Their reference to coping mechanisms is through informal exchange of transfers and loans within families and communities, and also more structured institutions that provide savings and credit (Morduch and Sharma, 2002).

Morduch and Sharma (2002) introduce the idea that poor households lack 'insurance cover' required when hit by severe income shocks, as their asset base is weak and they typically don't have access to external coping mechanisms.

They assert that without concrete means of insurance, such households absorb minor shocks through reductions in household expenditure and adopting other livelihood strategies. However, should there be a major shock that affects an entire community (thus reducing 'safety nets' available in the form of social networks), then more drastic

action must be taken, which Morduch and Sharma (2002) allude to in their list of reactions following severe shocks and stresses:

- Removing children out of school and putting them to work to save school costs, and earn additional household income
- Increasing utilisation of public goods such as forests for the sale and consumption of firewood
- Reducing consumption of nutritious foods and reducing the quantity of meals
- Non-payment of taxes and contributions to community associations during the period of economic instability
- Selling material assets such as land, livestock and crops that can provide instant financial relief
- In severe and prolonged cases of vulnerability, such as long term drought and food insecurity, households may resort to urban migration for job seeking.

The consequences of such actions can be far reaching, and may have detrimental effects on the environment, as well as human and social capital stocks while compromising future livelihoods and earning potential.

The policy response of such shocks and stresses are often related to the creation of pro-poor financial institutions including microfinance, new savings banks, micro-insurance and even 'weather insurance' (Morduch and Sharma, 2002). There are other social safety-net interventions that proactively generate surplus income while strengthening social capital through collective action. Devereux (2002) introduces a Zambian case study demonstrating the effectiveness of public works projects that provide cash-for-work allowing labourers to save their earnings in community finance associations or invest them in agricultural equipment, materials and land to reinforce other forms of capital in case of future shocks.

The World Development Report on 'Attacking Poverty' (World Bank, 2000) examines the need for community involvement in planning and managing local infrastructure services for increased ownership and sustainability. It describes the involvement of beneficiaries in decision making as the starting point in creating local ownership of infrastructure assets, important in three dimensions (World Bank, 2000):

1. Choosing priorities: particularly for deciphering the relative value of social and productive investment and targeting within communities

2. Effective operation and maintenance: because governments are notorious for neglecting local infrastructure
3. Local ownership: required for community cost sharing in investments and operation in the absence of adequate budget allocations for infrastructure

Such approaches to infrastructure and access provision have the dual benefit of nurturing social capital through community organisation, while involving beneficiaries to be included in the decision making. The Community Transport Infrastructure component of the Social Recovery Project and the Road Sector Investment Programme (ROADSIP) in Zambia demonstrates how such community based programmes operate in practice (see Section 4.7.2, Chapter 4).

The significance of road maintenance programmes for poverty focused development also receives recognition from Porter (1995) who indicates that unmade roads could be maintained by local communities to a passable standard *if* they had access to necessary equipment such as graders, rollers, lorries etc from local government sources.

Evidently, low quality road networks in Africa affect the mobility and accessibility of the poor for achieving their livelihood goals, and actively strengthening their asset base for times of hardship. Narayan and Petesch (2002, p.64) report on the disrepair of roads in Kowerani in Malawi, where poor people explained that the government no longer maintains the roads and the community's spirit of self-help has dwindled "it is very difficult to mobilize for self-initiatives". Other villagers reported that they have tried to maintain the roads on their own but lack the proper resources to do so (Narayan and Petesch, 2002).

The case studies indicate that where poor people have the necessary materials to undertake repair works to aid basic access they do, in the majority of cases, not hesitate to mobilise themselves into collective action. Yet, due to their relative isolation, vital communication between state and civil society at the micro level is all too often absent: "lack of a good road and other facilities is not infrequently blamed by inhabitants of off-road settlements on their powerlessness to influence decision-making by policy makers. In countries across Sub-Saharan Africa, personal contact is often an essential component in the decision-making process" (Porter, 2002, p.292).

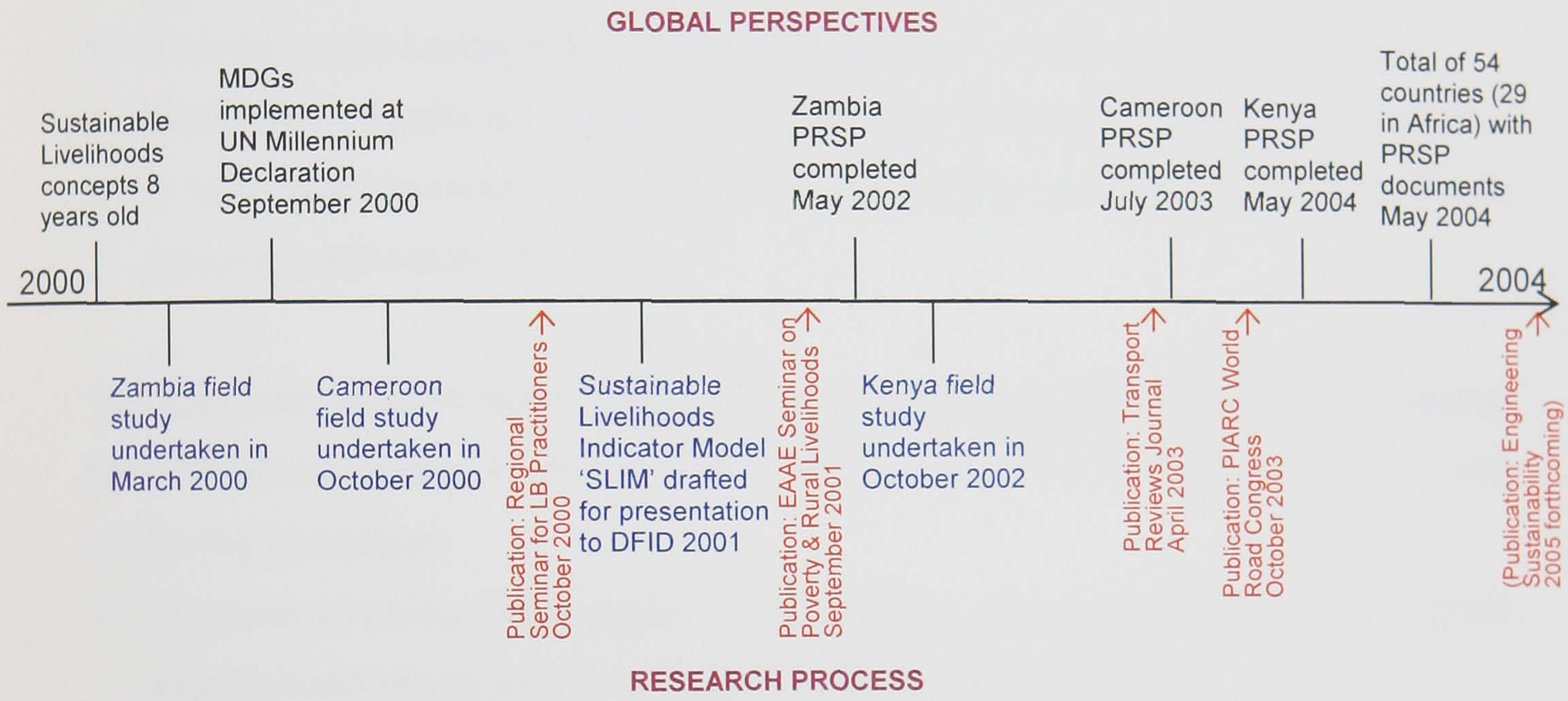
Arguably, this situation has become exacerbated by the neglect of road infrastructure and transport service requirements in the Millennium Development Goals (see Section 2.8.2 in the Review of Literature for background information on the MDGs). The MDGs and their associated targets have overlooked any significant reference to the role of transport in the development process (Fouracre and Rolt, 2001). A paper by the DFID Transport Resource Centre (2002b) attempts to redress this balance by showing that achieving the MDGs through single sector interventions (most notably health and education) is unlikely to be successful without cross-sectoral transport investments in all areas. Transport development itself is clearly a means to an end, the end being achievement of the MDGs, especially halving the proportion of global poverty by 2015.

Chapter 9 that follows discusses how social mobility can be linked to transport sector policy in contributing to poverty reduction before the MDG deadline in 2015. It then concludes with a reflection on the process adopted for conducting the research, drawing on lessons learnt, and providing some recommendations for future research.

CHAPTER 9: DISCUSSION AND CONCLUSIONS

The research for this thesis has been a four year journey that began as an investigation of how Sustainable Livelihoods Approaches can be utilised in rural transport planning. The course of the research has explored episteme[84] and praxis[85] within a framework of evolving global development paradigms and theoretical perspectives (see Figure 9.1).

Figure 9.1: Timeline of thesis



This research has taken a broadly inductive[86] approach (see Section 1.1, Chapter 1). It has not attempted to provide answers to all the questions surrounding the complexity of social capital concepts, or of the tensions between Sustainable Livelihoods Approaches and transport policy. Rather it has endeavoured to address these three key areas of traditional and contemporary development discourse in parallel, to inform the continuing policy debate of their linkages and challenge the relationships between them. In this way, a broad research question was formulated, before data were gathered and examined. These data and the analysis that followed led to the formulation of more focused research questions.

[84] Episteme is the Greek word for knowledge that can be demonstrated by logical argument from first principles (Nelson, 2001).
[85] Praxis is a Marxist term for social practice, meant to convey the performance of 'doing' in a cycle of action-reflection-action (BCC, 2004).
[86] Unlike deductive arguments (where the researcher begins with a theory and then gathers evidence or data to assess whether the theory is correct), inductive ones provide only probability, not certainty (Trochim, 2002).

The purpose of the research has been to investigate accessibility, Sustainable Livelihoods Approaches and social capital in relation to policy, strategy and practice.

The research culminating in the thesis has been based on these principle research questions:

1. What are the relationships between accessibility, Sustainable Livelihoods Approaches and social capital?
2. In what way do accessibility, Sustainable Livelihoods Approaches and social capital influence one another to add value to poverty reduction approaches?
3. How can social capital help people act effectively to deflect shocks and stresses?
4. Is mobility a significant variable in accounting for the extent of social interaction?
5. In what way can transport interventions enhance poor people`s access and inclusion in social capital networks?

The remainder of this Chapter examines ways in which social mobility can be linked to transport sector policy. It then explores how the research has brought together two conflicting disciplines:

1) Transport planning, which applies conventional cost benefit analysis for investment appraisal and adopts a classic blueprint approach; and in contrast,
2) Sustainable livelihoods and the five capital assets (in particular social capital), which is a contemporary branch of learning that adopts a process approach.

Following discussion of the research questions, the Chapter will conclude with a retrospective view of the research, reflecting on the implications of its outcomes for policy formulation and implementation, and anticipating the continuing discourse of development theorists, with recommendations for future research.

9.1 Linking Social Mobility and Transport Sector Policy

As discussed in the Review of Literature and the Zambia and Cameroon case study findings, Sustainable Livelihoods Approaches provide a framework for linking transport to social impacts and the Millennium Development Goals. Yet, as the second White Paper reveals, one of the biggest challenges of adopting Sustainable Livelihoods Approaches to policy reform is developing effective channels of communication to the

central policy network (DFID, 2001c). Promoting dialogue and participation in policy-making by the poor requires (DFID, 2002b):

- High quality participatory approaches that promotes research by poor people into their priorities, needs and issues
- Support for the communication process
- Institutions able to respond to the interests and needs defined by poor people.

There are clearly several serious accessibility related challenges to be addressed in policy decisions over the next decade before the internationally imposed 2015 deadline, at the 'supranational' level (MDGs), national level (PRSPs), and at meso and micro levels (decentralisation) is reached. These may be summarised for Sub-Saharan Africa as follows:

- The physical infrastructure (defined as road, path and track networks, means of transport and transport services) required to facilitate achievement of the MDG goals (listed below) and their targets in remote rural areas is severely degraded due to 'policy evaporation' in transport delivery:

1. Eradicating extreme poverty and hunger
2. Achieving universal primary education
3. Gender equality and empowerment of women
4. Reduction in child mortality
5. Improvement in maternal health
6. Combating HIV/AIDS, malaria and other diseases
7. Environmental sustainability
8. Development of global partnerships

- The generation and maintenance of social capital networks are often inhibited by accessibility constraints, which can cause erosion of other vital human, physical, financial and natural asset stocks, especially following acute trauma at household or community level.

- Poverty is fed by powerlessness, isolation and exclusion. When hardship strikes, there is often little opportunity for the remote rural poor to 'signal' their vulnerability to external agents, especially if whole communities are affected and social capital mechanisms break down. The arrival of shocks and stresses can often

be the precursor to major demographic changes such as migration, or conversely destitution, if affected households have not nurtured rural-urban linkages and have nowhere to migrate to.

- Lack of 'awareness' of development opportunities (referred to earlier in Section 8.1.1) and horizontal communication with other social groups and vertical communication with central and local government institutions, prevents the rural poor from creating their own opportunities. For example, community led road works and provision of other infrastructures (such as boreholes, waste disposal, construction of local health posts and schools etc).

As mentioned at the beginning of Chapter 8, one of the only existing mechanisms for communities to signal their needs and constraints, and for prioritising investment to address those constraints, is through donor aid projects that extract information from household Censuses and more localised surveys that provide the foundation for blanket policy decisions. There is suggestion that some, if not all the Millennium Development Goals may *not* be achieved by 2015[87] (Development Committee, 2004). After this point in time, it is quite possible that the international community will gradually withdraw lending and grant support in an effort to prevent a cycle of dependency. The question is what mechanisms will be in place to foster an environment of communication and mobility when this withdrawal takes place and the emphasis on projects is gone and long since forgotten?

It would seem from the discussion that it is not only the poor who need to signal information to the state, but also NGOs, CBOs, the media, local government representatives (for example district road engineers), and social service providers, including teachers and health care workers (often stationed in remote areas with an absence of textbooks, stationery, drugs and even furniture), and extension workers. Communication mechanisms currently available to the poor include community associations, social clubs, government hierarchy (community leaders, village committees, local district authority, provincial and central government), and media channels (radio and television). They also include information and communications

[87] Current indications are that the percentage target of poverty reduction (24%) in Sub-Saharan Africa is falling far short of target, with 47% of the population living on less than $1 a day in 1999, indicating a reduction of only 1% since 1990. Absolute numbers of people remaining in poverty are also increasing with population growth (United Nations, 2004).

technology[88] and of course transport networks (roads, rivers and waterways, rail and air).

So why are important messages not being effectively communicated? The rural poor continue to struggle in isolation despite there being instruments for information to be filtered from the bottom-up and top-down. Woolcock and Narayan (2000, p.231) suggest that policymakers are to blame for miscommunication and in particular lack of uptake of social capital, claiming that there is "tension between social capital's virtues and vices" (see Table 2.2 in Chapter 2) that explains why "scholars and policymakers have been so ambivalent about its potential as a theoretical construct and policy instrument." They also highlight that having high levels of social solidarity and informal groups does not necessarily lead to economic prosperity. Indeed, a participatory poverty assessment in Kenya recorded 200,000 community groups active in rural areas, although the majority were not connected to outside resources (Narayan and Nyamwaya, 1996).

The institutional view of social capital is that it is a dependent variable, in that the capacity of social groups to act in their collective interest "depends on the quality of the formal institutions under which they reside" (North, 1990, in Woolcock and Narayan, 2000, p.234). Woolcock and Narayan (2000, p.242) go further to say that understanding how proposed policy interventions will affect the power and political interests of micro level stakeholders is a vital consideration, since "all policy interventions occur in a social context characterised by informal organisations, networks and institutions."

Similarly, there has been a call for change in the focus of transport research, in particular, increasing the understanding of the distributional impacts of transport development with a view to informing poverty policy initiatives (DFID, 2002b). Yet, there remain costs and externalities of providing transport interventions to meet poverty driven goals, a factor that should be considered in devising instruments to link social mobility and transport sector policy.

[88] Information and Communications Technology (ICT) can be defined as the application of modern communications and computing technologies (for example internet, mobile and satellite telecommunications), to the creation, management and use of information. In 2001 the United Nations Information and Communication Technologies Task Force was established to bridge the global digital divide and foster digital opportunity to service development for all.

This research has attempted to demonstrate that social capital needs to be maintained and physical access ensured to enable people to make the necessary face-to-face contact required for social capital to be strengthened. A framework for linking social mobility and transport sector policy would provide tangible instruments to facilitate communication within and between social groups and state decision makers. Rodriguez-Carmona (2004) has already cautioned practitioners as to the pitfalls of another project and policy mechanism, logical frameworks.

Logical frameworks are familiar to most researchers as a conventional methodology based on quantitative objectives and result indicators (in a similar format to the Millennium Development Goals).[89] Rodriguez-Carmona (2004) indicates that 'logframes' have proved to be ineffective instruments in following up and evaluating learning processes and the formation of social capital, since social capital forms part of a long-term process that cannot be tackled within a classical evaluation framework centred on short term projects.

In light of these requisites, an effective long-term policy mechanism would serve to (see Box 9.1):

- Link social capital and transport sector policy to influence investment decisions
- Provide physical access and mobility requirements for
    1. Establishing and maintaining social capital networks
    2. Signalling vulnerability and symptoms of isolation and risk to meso and macro level institutions

Box 9.1: Example of a decision-making mechanism

Such a framework or evaluation tool might incorporate the following:

a) Process approach: for example a set of simple **procedures** devised for use by NGOs, CBOs, donors and local government authorities to ensure proactive management of risk by external agencies, and support for capacity building within social networks

b) **Systems approach**: adopting for example a flow diagram to provide options for decision makers and communities to make their own choices (based on wider consultation) on activities that support the objectives of social mobility and maintenance of social networks

c) **Guidelines**: produced at micro, meso and macro levels that provide guidance and advice on how to adopt the approaches listed from a) to d), to be widely distributed and translated into

[89] There are 8 Millennium Development Goals, 18 targets, and 48 indicators in place to measure progress of the MDGs up to 2015.

local dialects. The series of *Overseas Road Notes* produced by TRL for DFID are examples of practical guidelines to be used by transport practitioners, some of which have been translated into Chinese and Chmer.

d) A **computer model** or programme (see the example of the Sustainable Livelihoods Indicator Model in Chapter 6)

e) **Checklist or screening tool**: to evaluate the extent to which the procedures outlined above have been adopted by each organisation, and assess the impact of activity (or inactivity) on target beneficiaries.

Woolcock (2001) urges development practitioners and policymakers to ensure that the activities of the poor 'reach out' and are 'scaled up'. Inaccessibility and immobility are clearly symptoms of social exclusion, but as Woolcock (2001) demonstrates, marginalised groups themselves possess unique social resources that can be used as a basis for overcoming that exclusion, and as a mechanism for helping forge access to institutions. As mentioned in the previous section, NGOs can have a crucial role to play in this process because it takes considerable time to earn the confidence and *trust* of the poor, and respect of institutional gatekeepers (Woolcock, 2001).

Chapter 8 reviewed the theoretical and practical evidence, and it would appear that social capital provides a catalyst for service delivery, enabling personal mobility in the absence of conventionally measured economic benefits. Indeed, without the social capital argument, the reasons for maintaining rural transport infrastructure and services in isolated areas remain weak.

Regional integrated planners, such as the Rural Travel and Transport Program (part of the World Bank's Sub-Saharan African Transport Program) and the International Labour Organization's Integrated Rural Accessibility Planning (IRAP) are already delivering access interventions with cross-sectoral support. They have a role in giving social capital and accessibility due weight at policy level, and in making a case for rural subsidy to provide poor people with a minimum degree of social movement, to counteract the isolation dimension of poverty.

Social capital provides an additional argument for intervention, other than social service access (principally health and education), and justification for investment in remote areas that do not qualify for assistance under cost benefit analysis. To bolster social capital in remote communities, institutional presence is also required so that

communities can communicate with the outside world in the event of crises, which break down social capital when whole communities are affected.

There is a strong argument for using social capital benefits as justification for road investment in rural areas. However, there may undoubtedly be much scepticism from economists and sociologists. Economists might claim that social capital can not be sufficiently disaggregated from other forms of capital generation (because of difficulties in measurement and the issue of value judgements). While sociologists may argue that social capital should be considered qualitatively in a framework that supports Sustainable Livelihoods Approaches.

It is clear that any improvements in physical access and modern communications technology that can foster information exchange across social groups should be emphasised to complement social interaction based on face-to-face interchange. Social networks are one of the primary resources of the poor for managing risk and vulnerability, and outside agents need to find ways to complement these resources rather than substitute for them (Woolcock and Narayan, 2000). "Without connections to resources beyond poor communities, poor people's networks provide survival and defence, a struggle to meet daily needs" (Narayan *et al*, 2000a, p.45).

The outcomes of Porter's (2002, p.291) work in Ghana and Nigeria were summed up in one sentence: "to live off-road is to be invisible." It is a very unforgiving world we live in when 75% of the world's absolute poor[90] (825 million) live in rural areas (World Bank, 2004a) where isolation is pervasive and the vast majority of people are indeed invisible. Arguably the role of researchers is to be proactive in reversing this trend so that practitioners of 2015 will instead say "to live off-road is to be invincible!"

This research has suggested that there is some degree of tension between traditional transport systems adopting robust engineering methods for poverty reduction, and contemporary anthropological facets of Sustainable Livelihoods Approaches and social capital. Arguably, donor agencies have a role in managing these tensions, both financially and institutionally, in order to optimise opportunities for and sustainability of poverty reduction measures.

[90] Living on less than 1 US Dollar a day.

This requisite for managing tension and opportunity between 'traditional' versus 'new' is elaborated in the next section.

9.2 Blueprint versus Process Approaches

The overall premise of this thesis is that before development practitioners can achieve action, they must first have awareness and understanding, which this research has sought to provide: awareness understanding action.

With regard to the management of tension between *traditional* and *new* approaches, the traditional transport engineering paradigm can be compared with classical forestry. As with the tradition of road transport through engineering practice, the common strategy for rural forestry development is to extend and decentralise the existing classical organisation and infrastructure (van Gelder and O'Keefe 1995). Table 9.1 shows a comparative analysis between *traditional* and *new* in forestry and transport, and indicates that rural forestry/road engineering problems require the direct involvement and participation of rural people to achieve solutions and avoid conflicts of interest.

Table 9.1: Traditional versus new approaches to development: transport engineering and forestry compared

Traditional forestry	New forestry	Traditional engineering	New engineering
▪ Expert led ▪ Top-down ▪ Timber ▪ Protection - fire - theft - disease ▪ Revenue ▪ Employment ▪ Sustainable yield	▪ Participatory ▪ Consultative ▪ Forest management and design ▪ Benefits distribution ▪ Multiple products (bark, leaves, fodder) ▪ Watershed protection ▪ Development focus	▪ Expert led ▪ Top-down ▪ Capital and equipment intensive ▪ Construction ▪ Land insecurity ▪ Environmentally damaging ▪ Risk of STIs[91]	▪ Participatory ▪ Consultative ▪ People-centred ▪ Labour based ▪ Sustainable ▪ Maintenance ▪ Gender equality ▪ Social construction standards

[91] Sexually transmitted infections (STIs), most notably HIV/AIDS are typically (but not exclusively) associated with migrating labour gangs who camp among roadside communities during road construction. 'New' road construction programmes incorporate training and family planning to limit promiscuous behaviour and prevent the spread of HIV/AIDS. Labour is often sourced from local villages to keep families together (World Bank, 2004e).

This is not to say that social forestry should or could replace plantation forestry completely, in the same way that roads engineering should not be replaced altogether. Yet, there are instances where engineering activities have sometimes been counterproductive to developing sustainable transport for rural development and poverty reduction (refer to Box 8.1, Chapter 8). Sustainable Livelihoods Approaches are helping engineers to address rural development from a new 'social' rather than 'traditional' perspective, hence delivering *appropriate* mobility solutions to address the requirements of target beneficiaries, in consultation with them.

In discussing blueprint versus process approaches for the development of sustainable rural transport systems, the concept of 'blueprint' and 'process' must first be explained. At project level, a blueprint approach involves delivering the project in a specified form (with measurable inputs and outputs), and time (with a set starting data and completion date) (University of Melbourne, 2003). Conversely, projects that adopt a process approach have three key principles (University of Melbourne, 2003):

1. Flexible in design and subject to alteration as new experiences unfold
2. Generate an understanding of the contextual aspect of the project e.g. institutional factors shaping projects
3. Accommodating unanticipated and idiosyncratic aspects of development programmes and paradigms

Arguably, development cannot be considered as simply the need for transfer of technology, on the basis that knowledge already exists on which such technologies can be built. More often, the reverse is the case, with the build up of knowledge through participatory research that leads to more rapid project implementation and greater impact (Dolberg, 1991). The contrasts between blueprint and process approaches to development are captured in Box 9.2.

Box 9.2 can be applied to all development sectors, perhaps especially the transport sector, which is still going through a transition from a blueprint to process approach, twenty years after the concept was first conceived (Box 8.1, Chapter 8). Nevertheless, Chambers (1997, p.189) claims that blueprint approaches are needed and "are brilliantly successful in engineering." He continues by stating that "blueprints, precise measurements and calculations, standardization and much that goes with normal professionalism, are essential for physical constructions..." (Chambers, 1997, p.189).

Box 9.2: The blueprint and learning process approaches in rural development

	Blueprint approach	Learning process
Idea originates in:	▪ Capital city	▪ Village
First steps:	▪ Data collection and plan	▪ Awareness and action
Design:	▪ Static, by experts	▪ Evolving, people involved
Supporting organisation:	▪ Existing, or built top-down	▪ Built bottom up, with lateral spread
Main resources:	▪ Central funds and technicians	▪ Local people and their assets
Staff development:	▪ Classroom, didactic	▪ Field based action learning
Implementation:	▪ Rapid, widespread	▪ Gradual, local at people's place
Management form:	▪ Spending budgets, completing projects on time	▪ Sustained improvement and performance
Content of action:	▪ Standardised	▪ Varied
Communication:	▪ Vertical: orders down, reports up	▪ Lateral: mutual learning and sharing experience
Leadership:	▪ Positional, changing	▪ Personal, sustained
Evaluation:	▪ External, intermittent	▪ Internal, continuous
Error:	▪ Buried	▪ Embraced
Effects:	▪ Dependency-creating	▪ Empowering
Associated with:	▪ Normal professionalism	▪ New professionalism

Source: Chambers (1986)

According to Bond (1998), two principle schools of thought advocate process approaches:

1. The 'purists of participation and learning' who argue for the abandonment of the concept of project – favouring local institutional development (Korten, 1980; Chambers, 1993)
2. The managerialists who believe in the role of outsiders and argue that projects, managers and management systems should be more flexible and adaptive (Rondinelli, 1983; Brinkerhoff, 1992).

In demonstrating how Sri Lanka's Moneragala Integrated Rural Development Programme (MONDEP) adopted a process approach from its inception in 1984, Bond (1998) highlights that integrated rural development programmes can foster the required balance of local and external institutional support, with the latter being removed to cultivate self-sufficiency and capacity building. The twenty year programme was applied in three phases of implementation (Bond, 1998):

1. Initial capacity build-up: district agencies introduced to the approaches and objectives of the programme, and their planning and implementation capacities built up slowly through small experimental projects
2. Sustainable process phase: the main phase of the programme that should maintain a stable level of commitment, made up of projects of increasing size, which can be discharged over a short period
3. The phase-out: when no new initiatives are adopted to allow a seamless transfer of programme functions to permanent institutions, with gradual removal of project management and donor support.

Bond (1998, p.14) actually concludes his account of MONDEP stating that "the simple dichotomy of blueprint or process is not the only option available to programme designers", and that a mixture of these two ideological extremes are probably closer to reality, as demonstrated by the following:

- Blueprint THEN process: a programme designed to have a blueprint approach to establish improved infrastructure necessary for the functioning of basic services. Followed by a long-term programme working with local people to develop ways of improving their own livelihoods
- Process THEN blueprint: using process experimentation to establish the most effective approaches to solving local problems then mainstreaming the solutions using classic blueprint methods
- Blueprint/process CONTINUUM: elements of both blueprint and process approaches as independent with mixture of the two approaches co-existing
- Blueprint IN process: where a process approach is adopted for a programme but the resultant component projects resemble classic blueprints
- Process IN blueprint: where a programme is bound by a predetermined set of objectives or plan but only to a broad level of detail (e.g. a logical framework).

Sustainable Livelihoods Approaches build on learning process approaches to development, yet this shift in practice remains largely constrained by donors' requirements to achieve defined outputs within a short timeframe, according to the Bradford Centre for International Development (BCID) (Toner *et al*, 2004). In the discourse surrounding the DFID funded BCID project *Goodbye to Projects*. Sustainable Livelihoods Frameworks have been criticised for trying to "codify complexity in social development" and to "oversimplify the relationships between capital assets" (Toner, 2003, in Toner et al, 2004, p.2).

Furthermore, BCIDs research has pre-empted the withdrawal of donor support, with an investigation into the effectiveness of projects in delivering development, based on empirical research conducted in Tanzania, Uganda, Lesotho and South Africa (Franks *et al*, 2004). Projects have continued to be the favoured vehicle for aid funding because the project format facilitates strict financial control necessary for accountability of funds (Franks *et al*, 2004). There has been increasing disillusionment with the effectiveness and efficiency of project delivery, and this is evidenced by an increasing role in capacity building as components of projects (to emphasise the process rather than blueprint approach) (Franks *et al*, 2004). The outcomes of this latest perspective on Sustainable Livelihoods Approaches in relation to project delivery questions the power relationships between donors and recipient governments, and the sustainability of project outcomes once funding support has ceased (Franks *et al*, 2004).

The following section addresses the research questions posed by this thesis, and offers lessons for future research.

9.3 Retrospective View of the Research

This research journey has visited and revisited social development theories and the evolving paradigms in which they are situated, in light of the empirical case study research undertaken in Zambia, Cameroon and Kenya (Figure 9.1). This four year 'snapshot of time' is situated in an ongoing development discourse that has considered existing theories, and made enquiries of transport provision and social capital.

The research process itself, and the dialogue that follows reflects on the research issues raised when this thesis began. In doing so the thesis takes a retrospective look at the research and how it might have been undertaken differently, given current levels of knowledge.

Table 9.2 gives a summary of the research questions listed in the opening paragraphs of this Conclusion, and how they have been addressed in the research. It also provides a list of policy lessons that can be learnt from the research in pursuing similar lines of enquiry relating to the generation and maintenance of social capital through mobility solutions.

Table 9.2: Summary of the research questions and their outcomes

Research questions	Outcomes of the research	Lessons for policy development
1. What are the relationships between accessibility, Sustainable Livelihoods Approaches and social capital?	▪ Accessibility (comprising mobility and transport mechanisms) is essential for creation and development of capital asset stocks ▪ The degree of accessibility is related to the extent of income, education, health and institutional support acquired by a household/community ▪ Accessibility, SLAs and social capital have a symbiotic relationship, which together facilitate the reinforcement of poverty reduction measures.	▪ Sector wide approaches have limited application. State policy should advocate cross-sectoral co-operation to provide an optimum *balance* of social services in spatially convenient and physically accessible locations, along with *appropriate* means of transport and level of infrastructure to maximise utility of those services.
2. In what way do accessibility, Sustainable Livelihoods Approaches and social capital influence one another to add value to poverty reduction approaches?	▪ Social capital is shown to influence the extent of travel and investment in trip-making – households frequently travel long distances, incurring high trip duration, duration of stay at destination and transport costs, in order to support and maintain kin relationships with little immediate financial return on their investments ▪ Increased number of localised trips to support social capital related to neighbourly networks, community associations and committees also result in a conscious effort to reduce the risks of poverty, in particular shocks and stresses associated with rural survival ▪ The availability of transport and the extent to which rural people can travel geographically has a significant bearing on the type and location of social capital resources sought.	▪ The adoption of 'growth poles' in remote rural areas, with investment in basic infrastructure (e.g. access roads and a market) *can* be a catalyst to generate a critical mass of population for sustaining social networks and associations, and community led service provision (i.e. traditional birth attendants and primary educators) ▪ Participatory planning approaches are a precondition for growth poles to be successful.

3. How can social capital help people act effectively to deflect shocks and stresses?	▪ In many cases social capital can be substituted for the other capital assets (identified in this research as human, financial, physical and natural) ▪ In times of crisis, vulnerable people might be able to convert their social capital 'investment' by calling on social capital networks for emotional or financial support ▪ If whole communities face crisis, they often seek assistance from external sources (urban based relatives or donor/state support).	▪ Revolving funds (as found in abundance in Kenya) are a means for social networks to formalise this conversion of social capital during crises by paying out sums of money for funerals, following retrenchment or harvest failure etc ▪ Institutional support may be required to optimise the operational efficiency of such networks without coercion and with the full support and consultation of their members.
4. Is mobility a significant variable in accounting for the extent of social interaction?	▪ There is a direct correlation between social capital generation and the extent of mobility. Poor people who are *immobile* are more prone to vulnerability and shocks because the physical means of communicating 'ill-being' are absent ▪ In remote and isolated areas being visible is one of the only means of having a voice and being heard, and often requires physical movement.	▪ Policy considerations need to address existing barriers that prevent an enabling market for IMTs manufacturers and parts suppliers (i.e. import taxes), with special consideration for the young, elderly, women and people with physical and visual impairments ▪ Policy for rehabilitation/maintenance of feeder roads can channel use of materials and standards appropriate for the potential road density
5. In what way can transport interventions enhance poor people's access and inclusion in social capital networks?	▪ Social capital is built and maintained through close kinship bonds and friendships and nurtured over time through close contact and communication. Transport interventions, comprising infrastructure, and means of transport, provide the 'vehicle' for poor people to do this sustainably.	▪ Central/local government has the capacity to create a competitive market for private transport service provision (in the absence of state run services). They have a role to prevent autonomous syndicates creating an oligopoly.

The thesis has presented evidence that accessibility, Sustainable Livelihoods Approaches and social capital influence each other in important ways. This section, along with Table 9.2 indicate that there is indeed capacity for development practitioners to intensify measures of poverty reduction and progress towards achieving the Millennium Development Goals. The challenge is to ensure that their continuing discourse places these key issues at the forefront of their discussions. Yet, one wonders how a post 2015 dialogue can be sustained?

The Zambia and Cameroon case studies, undertaken at the outset of this research, explored the original research question 'How can Sustainable livelihood Approaches be utilised in transport planning?' Revisiting the Zambia and Cameroon case studies in light of the changing discourse of the thesis, it is possible to show interesting relationships between transport and social capital networks. These are summarised in Table 9.3.

Table 9.3: Summary of social capital and mobility issues in Zambia and Cameroon

Zambia	**Cameroon**
▪ Weekly activities incorporated social interaction (church, funerals and beer parties), often requiring long distance travel ▪ Villagers in the Copperbelt (notably Lwendo village) were mobilised for restoring feeder roads to facilitate vehicle passability ▪ Credit schemes were being supported by TDAU's IMT project for provision of animal draught equipment, and the Social Recovery Project that created an enabling environment for 'ownership' of infrastructure improvements ▪ Individual farmers loan out equipment such as ox-carts, ploughs and cattle to neighbours ▪ Social assets were reportedly the strongest asset type in the sustainable livelihoods analysis for Northern and Copperbelt Provinces.	▪ Villagers make, on average, twice as many social trips in the Southwest (60) than in Adamaoua Province (30) each year ▪ Villagers travel on average 8km for social trip purposes in Southwest compared with 76km in Adamaoua Province ▪ In some villages surveyed (Ikata, Southwest and Vourgne Mamboum, Adamaoua) water is provided by a social committee to which members contribute fees for managing the common resource ▪ Other villagers in Adamaoua Province (located along the Mbe-Sassa Mbersi road) mobilise themselves to collectively hire transport during harvest periods ▪ Radio programmes in the Southwest facilitate communication among rural women and raise awareness of household issues on literacy and family planning etc.

The literature that supports issues of social capital and mobility in Zambia and Cameroon is sparse but relevant.

In his essay addressing Zambia's need to effectively utilise its social capital, Chipakupaku (2002, paragraph 6) states that "whereas economic capital is in people's bank accounts and human capital is inside their heads, social capital inheres in the structure of their relations." Chipakupaku (2002) also supports the argument that social capital is not just the sum of the institutions that underpin a society, it is the glue that holds them together. Nevertheless, his discussion of social capital in Zambia is limited to the successes of the Asian community in the country who provide interest-free loans and skills training to their kin, enabling them to generate economic capital (Chipakupaku, 2002). His message is disheartening in that it suggests that if Zambians are to address current poverty levels, they must learn to build social capital networks based on trust and honesty, therefore insinuating that trust and honesty is lacking in Zambia.

In Zambia the Social Recovery Project (SRP) (please refer to Section 4.7.2 in the Zambia Case Study) supports the generation of social capital through locally generated community-based projects that improve infrastructure and service delivery to the poor. The SRP provides an enabling environment for communities to prioritise their own needs, identify solutions, organise themselves and contribute in cash and kind to initiate activities that provide solutions to their problems.[92]

Barkworth (1999) identified several factors in the SRP that influence the quality and extent of community participation. He found that communities are more likely to participate if they are well informed, well organised and have good trustworthy leaders. Projects which are simple enough for the community to implement with minimum outside technical assistance and of a manageable size are selected (Barkworth, 1999). Experience has shown that investment in a community which shows this self-reliance is more cost-effective and sustainable than an investment in a community which waits passively for assistance (Barkworth, 1999).

The literature on social capital in Cameroon is dominated by micro-finance schemes. Mayoux (2001) for example discusses women's empowerment in the context of social

[92] Personal communication with Benny Zulu, Programme Co-ordinator, SRP Microprojects Programme.

capital and micro-finance in seven programmes in Southwest, Northwest, West and Littoral Provinces. Group based programmes are assumed to build social capital through developing and strengthening women's economic and social networks, with micro-finance providing especially significant benefits (Mayoux, 2001):

- Savings and credit provision contributes to a process of individual economic empowerment by enabling women to decide about savings and credit use
- It is assumed that women will invest in their own economic activity, either agricultural production or micro-enterprise, thus increasing household income
- Women's economic empowerment leads to increased well-being, and enables women to renegotiate changes in gender relations leading to social and political empowerment.

Mayoux (2001) suggests that micro-finance has considerable potential to contribute to women's empowerment when it builds on women's networks and through group activities. However, she concludes on a cautionary note: "unless micro-finance programmes move beyond complacent assumptions about automatic contributions of group formation to women's empowerment they risk becoming little more than yet another cynical self-help means of shifting the costs of development onto poor women" (Mayoux, 2001, p.462).

Taking a more environmental perspective of social capital, Sharpe (1998) explores the relevance of social capital in protecting the tropical rain forest in Cameroon. In an attempt to reverse the supposedly negative activities of local forest users, external agencies have focused on community participation in conservation. Sharpe (1998) highlights that the state has been all but absent in terms of infrastructure construction in much of rural Southwest Province, with roads, clinics, village halls etc built by timber companies (and repaired or maintained by village development groups).

Section 9.3.1 explores alternative avenues of research that could be pursued, adopting transport, sustainable livelihoods and social capital approaches.

9.3.1 Lessons learnt from undertaking the research

The research for this thesis has pursued a particular path of development, to establish the extent and significance of relationships between transport, sustainable livelihoods and social capital. However, these three major development approaches are not

mutually exclusive and this research may have pursued a range of other varying but closely associated topics. This section explores how the research might have been undertaken if one of the following lines of enquiry had been investigated, and in what ways the methodology could have been improved in pursuit of the enquiry.

1) Emphasis on rural-urban migration and consequential effects on:

- Labour mobility
- Regional integration
- Macroeconomics and trade
- Effects of globalisation

Migration is currently a hot topic among development practitioners, especially with regard to sustaining livelihoods and the effects of migration on social capital formation and maintenance. This research might have reviewed the dynamics of sustainable livelihoods, access and mobility needs, and rural-urban linkages in the DFID funded study of a transport corridor in Uganda and Zimbabwe for the *Sustainable Livelihoods Mobility and Access (SLAM)* project. The research analysed long and short distance trip-making across urban, peri-urban, rural and secondary settlements in each country. It revealed the importance of access and mobility to the generation of economic and non-economic activities and highlighted the significance of social capital (Bryceson *et al*, 2003).

However, the emphasis of this study by Bryceson and colleagues (2003) was mobility patterns in relation to livelihood pursuits of stratified economic strata, and the introduction of accessibility measures to enhance poor people's *economic* livelihood prospects. The significance of social capital was not incorporated into the research design (logical framework) or methodology, but rather it was born out of focus group discussions, revealing historically embedded cultural preferences as an essential component of mobility patterns (Bryceson *et al*, 2003). The significance of mobility in facilitating social trip-making emerged as a 'by-product' of the project, hence a comprehensive review of social capital from these case studies would have biased this research towards economic as opposed to social considerations.

The following web sites provide information on these topics (accessed 30 June 2004):

The SLAM project: www.transport-links.org

Globalisation: www.globalisationguide.org

Migration and social capital: www.livelihoods.org/hot_topics/migration.html
www.worldbank.org/poverty/scapital/topic/econ2.htm

Rural-urban linkages and social capital: www.keysheets.org

2) Social capital and *urban* mobility

It was a strategic decision to focus this research on the *rural* poor, and to investigate mobility needs and constraints in the case study countries from a rural perspective. This was principally because of the existing research projects that facilitated the conduct of empirical case studies (namely the Policy Toolkit – Zambia and Cameroon, and the KENDAT RTS project – Kenya). Moreover, poverty continues to be pervasive in remote rural regions, and there are few signs of it significantly reducing in Africa in the foreseeable future, specifically because poverty feeds on isolation, and the inability of people to access relevant capital stocks necessary to sustain a livelihood.

Nevertheless, another DFID funded research project that was undertaken in the same timeframe as this research might have been adopted as the basis of research. The *Activity Patterns, Transport and Policies for the Urban Poor* project, was undertaken in Zimbabwe, Ghana and Sri Lanka. Its aim was to address the ways in which transport influences how well other sectors (in particular health, education and employment) operate and deliver benefits that contribute to the sustainable livelihoods of the urban poor (TRL, 2003b). Outputs of the project include guidance on the development of urban transport planning and policies, taking account of the needs of appropriate stakeholders and beneficiaries (TRL, 2003b). However, its focus did not extend to an investigation of social capital formation in urban areas.

In hindsight, and given that an estimated 58% of the world's population will be living in urban areas by 2025 (Brockerhoff, 2000), this research could have undertaken a comparative review of social capital growth in rural and urban locations. However, the dynamics of social capital, and the complexity of transport and mobility in an urban as opposed to rural setting are contrasted to such an extent that it would have proved difficult to derive any meaningful findings that would be useful in aggregate to development practitioners and decision-makers.

The following web sites provide information on these topics (accessed 30 June 2004):

The UAP project: www.transport-links.org

Social capital and urban development:

www.worldbank.org/poverty/scapital/topic/urban1.htm

Urban transport: www.worldbank.org/transport/ut_over.htm

Urban and rural change: www.livelihoods.org/hot_topics/UrbanRural.html

3) Social capital and mobility outside Sub-Saharan Africa

Again, the strategy for this research was to focus on social capital and mobility in Sub-Saharan Africa, mainly because of the opportunities made available for undertaking case studies in Zambia, Cameroon and Kenya, and because of the researcher's previous experience in Africa. Nevertheless, it would also have been interesting to compare and contrast the geographical distribution of social capital in Africa, with that of other developing regions, most notably Latin America, Asia, Eastern Europe and other transitional countries. This may well be possible outside the parameters of this research thesis, given a sufficient budget and institutional support, and may be pursued at a later date by the researcher, in a professional capacity.

The following web sites provide information on these topics (accessed 30 June 2004):

Social capital in different regions:

http://poverty.worldbank.org/library/topic.php?topic=4294

Economic growth and social capital in Asia:

http://ideas.repec.org/p/nbr/nberwo/5470.html

Rural livelihood strategies and social capital in Latin America:

www.une.edu.au/febl/GSARE/AREwp01-6.PDF

Working papers of the World Bank's social capital initiative:

www.worldbank.org/poverty/scapital/wkrppr/wrkppr.htm

4) Qualitative methodology – use of participatory approaches

Lastly, given the wealth of evolving literature on the topic of the popular but contentious participatory appraisal methodology that has flourished since this research began, there may well have been scope to expand the analysis to incorporate a critique of PA methods for yielding information on social capital and mobility. There was also limited capacity to carry out the following in this research:

- Devise new and innovative participatory methods and exercises to address specific issues of social capital and mobility

- Incorporate PA exercises other than focus group discussions and semi-structured interviews in the Kenya case study (because the survey methodology had been predetermined by KENDAT)
- Conduct full participatory rural appraisal (PRA) involving a longitudinal study of the survey sites (rapid rural appraisal (RRA) was adopted due to time and resource constraints).

The following web sites (also featured in Section 3.5 of the Methodology) provide information on participatory appraisal theory and methodological tools:

Participation Resource Centre at IDS: www.ids.ac.uk/ids/particip

Participatory Learning and Action Notes at IIED:

www.iied.org/sarl/pla_notes/index.html

Eldis: gateway to development information: www.eldis.org/participation/index.htm

The Participation Toolkit: www.toolkitparticipation.nl/index2.htm

Participation and Civic Engagement at World Bank:

www.worldbank.org/participation

It has been argued in this thesis that the relevance of transport to poverty reduction is the extent to which it helps improve access to goods, services and opportunities that are important to poor people. Some of the measures that are key in improving access include:

- Promoting use of Intermediate Means of Transport (IMTs): IMTs can substantially improve the efficiency of transport especially in many rural areas of Africa where human porterage is a common method of load carrying and walking is the main means of personal travel. Animal drawn carts for example can increase the amount of farm produce that is transported, while bicycles can improve personal mobility
- Improvements in transport infrastructure: Ensuring that infrastructure, which is used by poor people in accessing economic and social services, is in good condition throughout the year is essential in reducing the time and effort that goes into transport activities. Rural infrastructure consists of feeder roads, tracks, paths and bridges that can be improved using low-cost techniques. Improvements in rural infrastructure should aim at easing transport and travel within the local area as well as increasing external links. Use of local labour and resources is an important way of lowering costs and stimulating local employment
- Integrating transport with other planning measures: Location of common services has a significant bearing on the transport effort that goes into the utilisation of these

services. It is important for public policy to promote more holistic planning approaches that combine low-cost infrastructure, use of low-cost means of transport and provision of social amenities that are appropriate to the population density of a geographical area

- Social networking as a catalyst for trip-making and expenditure on transport services: The linkage between improved access and mobility, and generation and maintenance of social capital is clear. Rural communities and poor people *will* undertake journeys to strengthen their livelihood assets, and in particular social capital. The mode they choose to travel by is determined by their financial status. There is policy leverage in supporting locally available social networks (to avoid extraneous travel), and in providing low cost or subsidised transport services (to limit unnecessary expenditure).

Transport is necessary in achieving a wide range of objectives including economic growth, personal welfare, governance and empowerment as well as security. However, the effectiveness of the transport sector in delivering these objectives is limited by an absence of policy links to other sectors to which transport plays an important role.

9.3.2 Recommendations for future research

An imperative for the transport sector is arguably to move from a position of isolation and to find clear interfaces with other sectors that are delivering on poverty reduction. This provides increased scope for more integrated methods of planning that involve optimal combinations of transport and proximity planning interventions.

The sector needs to develop pro-poor, institutional and regulatory frameworks. Key elements of these include:

- Establishing and formulating mechanisms for collaboration with other sectors such as health, education, small enterprise etc
- Institutionalising participatory approaches in the transport sector and mainstreaming gender and social assessments
- Adopting regulatory standards that support low-cost means of transportation and infrastructure

There is a need for the transport sector to increase its understanding on the links between accessibility and poverty. The transport sector can learn from the experiences

of other sectors including agriculture, water and health services etc. Common threads that run through many of these sectors are principles of participation, cross-sector collaboration and partnerships, and an emphasis on balancing between hardware investments and software elements (emphasis on local capacity building, local knowledge, monitoring of impacts). Arguably, this is the paradigmatic shift that the transport sector needs to make.

On the social side, the message from Woolcock and Narayan (2000, p.233) is equally plain. "The clear challenge to social capital theory, research, and policy from the networks perspective is to identify the conditions under which the many positive aspects of bonding social capital in poor communities can be harnessed and its integrity retained (and negative aspects dissipated), while simultaneously helping the poor gain access to formal institutions and a more diverse stock of bridging social capital. This process is fraught with dilemmas, especially for external NGOs, extension services and development agencies, because it may entail altering social systems that are the product of longstanding cultural traditions and powerful vested interests."

There is significant mileage in transport planners and practitioners adopting a process approach (most notably in the form of sustainable livelihoods and associated participatory approaches) to address issues of poverty. Planners and practitioners also have a role in giving social capital considerations due weight in supporting investment in rural accessibility interventions.

This research has helped identify some of the relationships between accessibility, Sustainable Livelihoods Approaches and social capital. It has been informed by analysis of data obtained from empirical case studies in Zambia, Cameroon and Kenya, and from a comprehensive assessment of theories and paradigms that have been evolving historically and over the same time period as the thesis.

This thesis' concluding Chapter does not mark the end of the debate. On the contrary, it has opened up new research challenges that can be pursued by the candidate through research projects undertaken at TRL.

BIBLIOGRAPHY

ABOM, B. (2004). Social capital, NGOs and development: a Guatemalan case study. *Development in Practice*, Vol. 14, No. 3, pp.342-353

ABOUT, Geography (2004) [online]. [accessed 16 June 2004]. Available from www.geography.about.com

ACTIONAID (1992). *From input to impact: participatory rural appraisal for ActionAid the Gambia.* London: International Institute for Environment and Development

AHMED and HOSSAIN (1990). *Development impact of rural infrastructure in Bangladesh.* Research Report 83. Washington D.C: International Food Policy Research Institute

AIREY, A. and CUNDILL, M. A. (1998). *A study of household travel in the Meru District of Kenya.* TRL Report 353. Crowthorne: TRL Limited

AMIN, A. and DUBOIS, J.L. (1999). *A 1999 update of the Cameroon poverty profile.* Washington D.C.: World Bank

ARCHONDO-CALLAO, R. (1999). *Roads economic decision model (RED) for economic evaluation of low volume roads.* Sub-Saharan Africa Transport Policy Program Technical Note No. 18. Washington D.C.: World Bank

ASHLEY, C. and CARNEY, D. (1999). *Sustainable livelihoods: lessons from early experience.* London: Department for International Development

ASIAN DEVELOPMENT BANK (1999). *Handbook for the economic analysis of water supply projects.* Manila: Asian Development Bank

AYEE, J. (1996). The measurement of decentralisation the Ghanaian experience 1988-92. *African Affairs*, 95, pp.31-50

BAMBERGER, M. and DAVIS, A. (Eds.) (2001). *Women and rural transport in development. The Rural Transport Knowledge Base.* Crowthorne: TRL Limited

BARKER, J. (1993). *Paradigms: the business of discovering the future.* Harper Business

BARKWORTH, C. (1999). *Zambia: the social recovery project's community initiatives component.* Findings No. 137. Washington D. C.: World Bank

BARWELL, I. EDMONDS, G. HOWE, J. and DE VEEN, J. (1985). *Rural transport in developing countries*. London: Intermediate Technology Publications Ltd

BCC, The Philosophy Department (2004). *Glossary: Hegel and Marx* [online]. Pemberton, USA: Burlington County College [accessed 1 July 2004]. Available from http://staff.bcc.edu/philosophy/HEGELMARXGLOSSARY.htm

BECKER, G. (1964). *Human capital: a theoretical and empirical analysis.* New York: National Bureau of Economic Research

BECKER, G. (1977). *The economic approach to human behaviour.* Chicago: University of Chicago Press

BELLINGER, G. (2004). *Systems: understanding the way* [online]. [accessed 17 June 2004]. Available from www.systems-thinking.org

BENTLEY, J. (2003). *Cameroon project* [online]. Silsoe Aid for Appropriate Development. UK: Cranfield University [accessed 20 June 2004]. Available from www.silsoe.cranfield.ac.uk/safad/cameroon.html

BIGSTEN, A. and KAYIZZI-MUGERWA, S. (2000). *The political economy of policy failure in Zambia.* Working Papers in Economics No. 23. Sweden: Göteborg University

BOND, R. (1998). *Lessons for the large-scale application of process approaches in Sri Lanka.* Gatekeeper Series 75. London: International Institute for Environment and Development

BONNAL, J. (1998). *Relating social capital, traditional community institutions and decentralisation processes* [online]. The Online Sourcebook on Decentralization and Local Development [accessed 16 June 2004]. Available from www.ciesin.org/decentralization/English/Issues/relating.html

BOOTH, D. (ed.) (2003). *Fighting poverty in Africa: are PRSP's making a difference?* London: Overseas Development Institute

BOOTH, D. HANMER, L. and LOVELL, E. (2000). *Poverty and transport.* A Report Prepared for the World Bank in Collaboration with DFID. London: Overseas Development Institute

BOOTH, D. and LUCAS, H. (2002). *Good practice in the development of PRSP indicators.* Working Paper 172. London: Overseas Development Institute

BORGATTI, S. P. (1996). *Organisational theory: determinants of structure* [online]. Massachusetts: Boston College [accessed 26 April 2004]. Available from www.analytictech.com/mb021/orgtheory.htm

BOSERUP, E. (1981). *Population and technology.* Oxford: Blackwell

BOURDIEU, P. (1997). The forms of capital. In HALSEY, A. H. LAUDER, H. BROWN, P. and STUART WELLS, A. (eds.). *Education: culture, economy and society.* New York: Oxford University Press, pp.46-58

BRETTON WOODS PROJECT (2001). *PRSPs just PR say civil society groups* [online]. Bretton Woods Project Update No. 23, June/July 2001. London: Bretton Woods Project [accessed 10 July]. Available from www.brettonwoodsproject.org/article.shtml?cmd[126]=x-126-15999

BRINKERHOFF, D. W. (1992). Looking out, looking in, looking ahead: guidelines for managing development programmes. *International Review of Administrative Sciences.* 58 (4), pp.483-504

BROCKERHOFF, M. P. (2000). An urbanizing world. *Population Bulletin.* Vol. 55, No. 3, pp.1-44

BROWN, A. FOSTER, M. NORTON, A. and NASCHOLD, F. (2001). *The status of sector wide approaches.* Working Paper 142. London: Overseas Development Institute

BROWN, L. and HARDING, A. (2002). *Social modelling and public policy: what is microsimulation modelling and how is it being used?* Canberra: National Centre for Social and Economic Modelling

BRYCESON, D. (1999). *Sub-Saharan Africa betwixt and between: rural livelihood practices and policies.* ASC Working Paper 43. Leiden: Afrika-Studiecentrum

BRYCESON, D. and HOWE, J. (1993). *Rural household transport in Africa: reducing the burden on women?* ASC Working Paper 15, Leiden: Afrika-Studiecentrum

BRYCESON, D. MAUNDER, D. MBARA, T. KIBOMBO, R. DAVIS. A. and HOWE. J. (2003). *Sustainable livelihoods, mobility and access needs.* TRL Report 544. Crowthorne: TRL Limited

BRYCESON, D. DAVIS, A. AHMED, F. and BRADBURY, T. (2004). *Framework for the inclusion of social benefits in transport planning: final report.* TRL Unpublished Report PR/INT/276/04. Crowthorne: TRL Limited

CARAPETIS, S. and RIVERSON, J.D.N. (1991). *The potential of intermediate means of transport in improving rural travel and transport in Sub-Saharan Africa.* Proceedings of the 5th International Conference on Low Volume Roads. 19-23 May, North Carolina State University, Releigh, North Carolina

CARNEY, D. (1998). *Sustainable rural livelihoods: what contribution can we make.* London: Department for International Development

CARNEY, D. (2002). *Sustainable livelihoods approaches: progress and possibilities for change.* London: Department for International Development

CARNEY, D. DRINKWATER, M. RUSINOW, T. NEEFJES, K. WANMALI, S. and SINGH, N. (1999). *Livelihoods approaches compared.* London: Department for International Development

CENTRAL STATISTICAL OFFICE (1998). *Zambia in Figures.* Lusaka: Republic of Zambia

CENTRAL STATISTICAL OFFICE (2003). *Census of population and housing 2000: summary report*. Lusaka: Republic of Zambia

CHAMBERS, R. (1983). *Rural development: putting the last first*. London: Pearson Education Limited

CHAMBERS, R. (1986). *Normal professionalism, new paradigms and development.* Discussion Paper No. 227. Brighton: Institute of Development Studies

CHAMBERS, R. (1993). *Challenging the professions: frontiers for rural development.* London: Intermediate Technology Publications

CHAMBERS, R. (1997). *Whose reality counts? Putting the first last.* London: ITDG Publishing

CHAMBERS, R. (2003). *Notes for participants in PRA-PLA familiarisation workshops.* Participation Resource Centre. Brighton: Institute for Development Studies

CHAMBERS, R. and CONWAY, G. (1991). *Sustainable rural livelihoods: practical concepts for the 21st century.* IDS Discussion Paper 296. Brighton: Institute of Development Studies

CHIPAKUPAKU, N. (2002). *Zambia needs to effectively utilise its social capital* [online]. Zambia: Mpelembe Alumni Association [accessed 29 June 2004]. Available from www.mpelembe.mappibiz.com/archives_02/ztt_human_capital.htm

CIA WORLD FACTBOOK (2004a). *Zambia* [online]. Central Intelligence Agency World Factbook [accessed 20 July 2004]. Available from www.cia.gov/cia/publications/factbook

CIA WORLD FACTBOOK (2004b). *Cameroon* [online]. Central Intelligence Agency World Factbook [accessed 20 July 2004]. Available from www.cia.gov/cia/publications/factbook

CIA WORLD FACTBOOK (2004c). *Kenya* [online]. Central Intelligence Agency World Factbook [accessed 20 July 2004]. Available from www.cia.gov/cia/publications/factbook

CLEVELAND, H. JACOBS, G. MACFARLANE, R. VAN HARTEN, R. and ASOKAN, N. (1999). *Human choice: the genetic code for social development.* Minneapolis: World Academy of Art and Science

COLEMAN, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology* 94, pp. 80-95

COLEMAN, J. S. (1990). *Foundations of social theory.* Cambridge: Harvard University Press

COLEMAN, J. S. (1997). Social capital in the creation of human capital. In HALSEY, A. H. LAUDER, H. BROWN, P. and STUART WELLS, A. (eds.). *Education: culture, economy and society*. New York: Oxford University Press, pp.80-95

COLLINS-LONGMAN (2002). *Kenya primary school atlas.* Harlow: Pearson Education Limited

COOKE, B. and KOTHARI, U. (2001). *Participation: the new tyranny?* London: Zed Books

CORNWALL, A. and PRATT, G. (2002). *Pathways to participation: critical reflections on PRA.* The Participation Group. Brighton: Institute of Development Studies

COTCOS (no date). *Organisational theory* [online]. Cooperative Technologies for Complex Work Settings [accessed 29 April 2004]. Available from www.sv.cict.fr/cotcos/pjs/TheoreticalApproaches/Organ/OrganIntro.htm

CÔTÉ, S. (2001). The contribution of human and social capital. *Canadian Journal of Social Policy Research,* Vol. 2, No.1, pp.29-36

COUDOUEL, A. EZEMENARI, K. GROSH, M. and SHERBURNE-BENZ, L. (2001). *Social protection.* PRSP Sourcebook. Washington D.C: World Bank

CREIGHTNEY, C. (1993). *Transport and economic performance: a survey of developing countries.* World Bank Technical Paper No. 232. Washington D.C: World Bank

CUNNINGHAM, C. (1999). Copper bottomed uncertainty. *Sulphur,* May 1999, pp.23-31

DALAL-CLAYTON, B. and BASS, S. (2002). *Sustainable development strategies: a resource book.* London: Earthscan Publications Ltd

DALY, H. E. and COBB, J. B. (1989). *For the common good: redirecting the economy toward community, the environment and a sustainable future.* Boston: Beacon Press

DAVIS, A. S. C. (2000). *Transport and sustainable rural livelihoods in Zambia: a case study.* Proceedings of the 8th Regional Seminar for Labour Based Practitioners, 15-19 October 2000, Cairo, Egypt.

DAVIS, A. S. C. (2001). *Transport versus service provision: a sustainable livelihoods profile of Cameroon.* Proceedings of the 74th EAAE Seminar on Poverty and Rural Livelihoods, 12-15 September 2001, Imperial College at Wye.

DAWSON, J. and BARWELL, I. (1993). *Roads are not enough.* London: Intermediate Technology Publications

DEFRA (2003). *Achieving a better quality of life: review of progress towards sustainable development.* London: Department for Environment, Food and Rural Affairs

DEFRA (2004). *Quality of life counts: indicators for a strategy for sustainable development for the UK, 2004 update.* London: Department for Environment, Food and Rural Affairs

DENNIS, R. (1998). *Rural transport and accessibility: a synthesis paper.* RATP No. 1. Geneva: International Labour Organization

DEPARTMENT FOR TRANSPORT (2004). *Mobility and inclusion unit update* [online]. [accessed 18 June 2004]. Available from www.dft.gov.uk/stellent/groups/dft_about/documents/page/dft_mobility_redirects_page.hcsp

DETR (1999a). *A better quality of life: a strategy for sustainable development for the UK.* London: Department of the Environment, Transport and the Regions

DETR (1999b). *Quality of life counts: indicators for a strategy for sustainable development for the UK.* London: Department of the Environment, Transport and the Regions

DEVELOPMENT COMMITTEE (2004). *Global monitoring report 2004: policies and actions for achieving the MDGs and related outcomes.* Prepared by the Staff of the World Bank and International Monetary Fund for the Joint Ministerial Committee of the Boards of Governors of the Bank and the Fund on the Transfer of Real Resources to Developing Countries

DEVEREUX, S. (2002). Can social safety nets reduce chronic poverty? *Development Policy Review,* 20 (5), pp.657-675

DFID (1997). *Eliminating world poverty: a challenge for the 21st century.* White Paper on International Development. London: Department for International Development

DFID (2000). *Eliminating world poverty: making globalisation work for the poor.* White Paper on International Development. London: Department for International Development

DFID (2001a). *Poverty: bridging the gap.* London: Department for International Development

DFID (2001b). *Sustainable livelihoods guidance sheets.* London: Department for International Development

DFID (2001c). *White paper: eliminating world poverty – making globalisation work for the poor.* London: Department for International Development

DFID (2002a). *Energy for the poor.* London: Department for International Development

DFID (2002b). *Transport's role in achieving the millennium development goals.* DFID Transport Resource Centre. London: Department for International Development

DFID (2003). *Sector-wide approaches (SWAps).* Policy Planning and Implementation: Keysheets. London: Department for International Development

DIXON-FYLE, K. (1989). *A new look at transport in the rural areas of developing countries.* Geneva: International Labour Organisation (ILO)

DIXON-FYLE, K. (1998). *Accessibility planning and local development: the application possibilities of the IRAP methodology.* RATP No. 2. Geneva: International Labour Organization

DOLBERG, F. (1991). Adding a learning to a blueprint approach: or what a small amount of flexible money can do. *Livestock research for rural development,* Vol. 3, No. 1, pp.1-10

DOLLAR, D. and KRAAY, A. (2000). *Growth is good for the poor.* Washington D. C: World Bank

DORAN, J. (1996). *Rural Transport.* Energy and Environment Technology Source Books. London: Intermediate Technology Publications

DRINKWATER, M. and RUSINOW, T. (1999). *Application of CARE's livelihoods approach.* Paper presented at the DFID Natural Resource Advisers Conference

EDMONDS, G. (1998). *Wasted time: the price of poor access.* Development Policies Department RATP 3. Geneva: International Labour Organization

EDMONDS, G. and RELF, C. (1985). *Background and discussion paper.* International Meeting on Transport and Development. 10-11 October 1985

EDMONDS, G. and DE VEEN J. (1991): *Technology Choice for the Construction and Maintenance of Roads in Developing Countries.* Geneva: International Labour Organization

EDWARDS, M. (2000). *Enthusiasts, tacticians and sceptics: the World Bank, civil society and social capital.* A World Bank Draft Paper. Washington D. C.: World Bank

ELLIS, F. (2000). *Rural livelihoods and diversity in developing countries.* Oxford University Press

ELLIS, F. and BIGGS, S. (2001). Evolving themes in rural development 1950s-2000s. *Development Policy Review,* 19 (4), 2001, pp.437-448

ELLIS, S. (1996). *The economics of the provision of rural transport services in developing countries.* PhD Thesis, Cranfield University

ELLIS, S. (1997). *Key issues in rural transport in developing countries.* TRL Report 260. Crowthorne: Transport Research Laboratory

ELLIS, S. and HINE, J. (1998). *The provision of rural transport services.* SSATP Working Paper No.37. Sub-Saharan Africa Transport Policy Program (SSATP). Washington D. C.: World Bank

FINE, B. (1999). The development state is dead – long live social capital? *Development and Change,* Vol.30, No.1, pp.1-19

FINE, B. (2002a). *It ain't social, it ain't capital and it ain't Africa.* University of London: School of Oriental and African Studies

FINE, B. (2002b). They f**k you up those social capitalists. *Antipode,* September 2002. vol. 34, no. 4. pp.796-799

FINE, B. and GREEN, F. (2000). Economics, social capital, and the colonization of the social sciences. In BARON, S. FIELD, J. and SCHULLER, T. *Social capital: critical perspectives.* Oxford: Oxford University Press. pp.78-93

FOSTER, M and MACKINTOSH-WALKER, S. (2001). *Sector wide programmes and poverty reduction.* Working Paper 157. London: Overseas Development Institute

FOURACRE, P. (1999). *Transport and sustainable livelihoods in developing countries and emerging nations.* TRL Annual Research Review. Crowthorne: TRL Limited

FOURACRE, P. and ROLT, J. (2001). *A transport perspective on the white paper.* TRL Unpublished Report PR/INT/231/01. Crowthorne: TRL Limited

FRANKENBERGER, T. and GARRETT, J. (1999). Getting connected: reducing livelihood insecurity by investing in social capital. *Food Forum,* Issue 46, January-February 1999, pp.4-9

FRANKS, T. TONER, A. GOLDMAN, I. HOWLETT, D. KAMUZORA, F. MUHUMUZA, F. and TAMASANE, T. (2004). *The changing format of development interventions.* Goodbye to Projects? Briefing Paper 3. University of Bradford: Bradford Centre for International Development

FUKUYAMA, F. (2000). *Social capital and civil society.* IMF Working Paper WP/00/74. Washington D. C.: International Monetary Fund

GANNON, A. and LIU, Z. (1997). *Poverty and transport.* TWU-30 Paper. Washington D.C.: World Bank

VAN GELDER, B. and O'KEEFE, P. (1995). *The new forester.* Colchester: Intermediate Technology Publications

GÉNIE CIVIL MAGAZINE (2000). *Cameroon's road network.* Yaounde: Ministry of Public Works.

GEORGE C. MARSHALL FOUNDATION, (2002) [online]. *The Marshall Plan.* Lexington: George C. Marshall Foundation [accessed 18 June 2004]. Available from www.marshallfoundation.org/about_gcm/marshall_plan.htm

GOFF, P. (2003). *Development economics web guide: structural adjustment policies* [online]. London: Edexcel [accessed 20 July 2004]. Available from

www.edexcel.org.uk/VirtualContent/48298/5c_4_Structural_Adjustment_Policies_16_0
1_03.pdf

GOK (1997). *Welfare Monitoring Survey III.* Government of Kenya: Ministry of Finance and Planning

GOK (2000). *Second report on poverty in Kenya: volume 1 incidence and depth of poverty.* Government of Kenya: Ministry of Finance and Planning

GOK (2001). *Poverty reduction strategy paper 2001-2004.* Government of Kenya: Ministry of Finance and Planning

GOK (2004). *Poverty reduction strategy paper 2004-2007.* Government of Kenya: Ministry of Finance and Planning

GOZ (2002a). *Poverty reduction strategy paper.* Government of Zambia: Ministry of Finance and National Planning

GOZ (2002b). *Transport policy.* Government of Zambia: Ministry of Communications and Transport

GOLDIE-SCOT, H. (2001). *The effect of institutional arrangements and governance issues on the poverty impact of Nepal's rural infrastructure development project.* Presentation to DFID's Sustainable Livelihoods Seminar Series, Birmingham, 19 October 2001

GROOTAERT, C. (1998). *Social capital: the missing link?* Social Capital Initiative Working Paper No.3. Washington D.C: World Bank

GROOTAERT, C. and VAN BASTELAER, T. (2001). *Understanding and measuring social capital: a synthesis of findings and recommendations from the social capital initiative.* Social Capital Initiative Working Paper No.24. Washington D.C: World Bank

GUGERTY, M. K. and KREMER, M. (1999). *The impacts of development funding on social capital: the Kenya local community action project.* Washington D. C.: World Bank.

HANDY, C. (1985). *Understanding organisations.* 3rd ed. London: Penguin Books Ltd

HICKSON, D. J. HININGS, C. R. LEE, C.A. SCHNECK, R. E. and PENNINGS, J. M. (1971). A strategic contingencies theory of intraorganizational power. *Administrative Science Quarterly,* 16 (2), pp.216-229

HINE, J. (1982). *Road planning for rural development in developing countries: a review of current practice.* TRRL Laboratory Report LR1046. Crowthorne: TRL Limited

HINE, J. and FOURACRE, P. (2001). *Road planning, funding and administration.* TRL Unpublished Report PR/INT/211/01. Crowthorne: TRL Limited

HINE, J. RIVERSON, J. and KWAKYE, E. (1983). *Accessibility, transport costs and food marketing in the Ashanti region of Ghana.* TRRL Supplementary Report SR809. Crowthorne: TRL Limited

HINE, J. and RUTTER, J. (2000). *Roads, personal mobility and poverty: the challenge.* World Bank Transport and Poverty Alleviation Challenge, 13 June 2000.

HIRSCHMAN, A. O. (1958). *Strategy of economic development.* Yale University Press

HJORTSBERG, C. A. and MWIKISA, C. N. (2002). Cost of access to health services in Zambia. *Health Policy and Planning,* 17 (1), pp.71-77

HOOGHE, M. AND STOLLE, D. (2003). *Generating social capital: civil society and institutions in comparative perspective.* New York: Palgrave Macmillan

HOWE, J. (1997a). *Transport for the poor or poor transport?* Geneva: International Labour Organisation

HOWE, J. (1997b). *The impact of rural roads on poverty alleviation.* The Managing and Financing of Rural Transport, 1-11 December 1997. Washington D.C.

HOWE, J. (2002). *Transport sector investment and poverty reduction.* Unpublished Report

HOWE, J. and DAVIS, A. (2002). *Boda Boda: Uganda's Rural and Urban Low-Capacity Transport Services*. Urban Mobility for All. Codatu X Workshop. Lomé, Togo, 12-15 November 2002

HOYLE, E. (1982). Micropolitics of educational organisations. *Educational Management and Administration,* 10, pp.87-98

HULME, D. (2000). *Protecting and strengthening social capital in order to produce desirable development outcomes*. SD SCOPE Paper No.4. London: DFID

IDS (1996). *The power of participation: PRA and policy*. Policy Briefing, Issue 7: August 1996. Brighton: Institute of Development Studies

IDS (2000). *Participation* [online]. Brighton: Institute of Development Studies [accessed 14 November 2003]. Available from www.ids.ac.uk/ids/particip

IDS (2003). *Pathways to participation: critical reflections on PRA.* Brighton: Institution for Development Studies

ILO, Advisory Support, Information Services and Training (2002). *The IRAP tool* [online]. Geneva: International Labour Organization. [accessed 23 June 2004]. Available from www.ilo.org/public/english/employment/recon/eiip/asist/local/irap.htm

INTERNATIONAL CENTER FOR PEACE AND DEVELOPMENT (no date). *Development theory* [online]. Napa: International Center for Peace and Development [accessed 29 April 2004]. Available from www.icpd.org/development_theory/SocialDevTheory.htm.

ITDG (2004). *Transport* [online]. Rugby: International Technology Development Group [accessed 3 July 2004]. Available from www.itdg.org/?id=transport

JACOBS, G. and ASOKAN, N. (2000). *Vision 2020: knowledge for development.* Presentation to the Planning Commission. Government of India. Napa: International Center for Peace and Development

JACOBS, G. and CLEVELAND, H. (1999). *Social development theory.* Napa: International Center for Peace and Development

JACOBS, G. MACFARLANCE, R. and ASOKAN, N. (1997). *Comprehensive theory of social development.* Napa: International Center for Peace and Development

JAZAIRY, I. ALAMGIR, M. and PANNICCIO, T. (1992). *The state of world poverty: an inquiry into its causes and consequences.* International Fund for Agricultural Development. New York: New York University Press

JOACHIM, T. and GRADY, H. M. (1991). *Participatory rapid appraisal for community development.* London : International Institute for Environment and Development

JONES, P. S. (2002). *Activity patterns, transport and policies for the urban poor (video).* University of Wolverhampton: Centre for International Development and Training

JONES, P. S. DODOO, A. VANDYKE, C. EMMANUEL, A. and KOFI, V. (2002). *Urban activity patterns: final report, Ghana.* University of Wolverhampton: Centre for International Development and Training

KASONDE-NG'ANDU, S. (2003). The evolution of education policy in Zambia. *Development Policy Management Forum. DPMN Bulletin,* Volume X, No. 1, pp.8-9

KAST, F. E. AND ROSENZWEIG, J. E. (1973). *Contingency views of organization and management.* Chicago: Science Research Associates

KENDAT (2001). *Guidance notes on the application of sustainable livelihood concepts.* Produced by the Socio-economic Team for the RTS Project. Nairobi: KENDAT

KENNENNI, L. (2002). *Situational analysis and resource mapping.* Consultancy report for the RTS Project. Nairobi: KENDAT

KERALI, H. (2000). *Overview of HDM-4 volume 1.* The Highway and Development Management Series. Paris: The World Road Association (PIARC)

KORTEN, D. C. (1980). Community organisation and rural development: a learning process approach. *Public Administration Review*, Vol. 40, No. 5. pp.480-511

KRISHNA, A. and UPHOFF, N. (1999). *Mapping and measuring social capital.* Social Capital Initiative Working Paper No. 13. Washington D.C: World Bank

LAWS, S. HARPER, C. and MARCUS, R. (2003). *Research for development: a practical guide.* London: Sage Publications

LEBO, J. and SCHELLING, D. (2001) *Design and Appraisal of Rural Transport Infrastructure.* World Bank Technical Paper No.496. Washington D.C: World Bank

LEWIS, W. A. (1954). Economic development with unlimited supplies of labour. *The Manchester School of Economic and Social Studies*, Vol. 22, No. 2, pp.139-191

LEYLAND, J. (1996). *An imbalanced load: gender issues in rural transport work.* Rugby: Intermediate Technology Development Group

LISINGE, R. T. (2001). *Transport, sustainable livelihoods and travel patterns in rural Cameroon.* Unpublished Report PR/INT/222/01. Crowthorne: TRL Limited.

LIVELIHOODS CONNECT (2004) [online]. [accessed 6 June 2003]. Available from www.livelihoods.org

LUGARD, F. D. (1893). *The rise of our East African empire.* Edinburgh: William Blackwood

LYON, F. (2000). *Trust and power in farmer-trader relations: a study of small scale vegetable production and marketing systems in Ghana.* Unpublished Doctoral Dissertation, University of Durham

LYON, F. and PORTER, G. (2005). The social relations of economic life and networks of civic engagement: social capital and targeted development in West Africa. In CLINE-COLE, R. and ROBSON, E. (Eds.) *West African worlds: paths through socio-economic change, livelihoods and development.* Pearson Education, pp.191-206

MACMILLAN EDUCATION (1985). *School atlas for Cameroon.* Oxford: Macmillan Education

MACMILLAN ZAMBIA (1997). *Basic Education atlas of Zambia.* Oxford: Macmillan Education

MACQUEEN, D. (2001). *Measurement malaise: is the SL approach inoperable?* Chatham: Natural Resources Institute

MALIK, K. (2002). Towards a normative framework: technical co-operation, capacities and development. In FUKUDA-PARR, S. LOPES. C. and MALIK, K. *Capacity for development: new solutions to old problems.* London: Earthscan Publications Ltd. pp.23-42

MALMBERG CALVO, C. (1994). *Case study on the role of women in rural transport: access of women to domestic facilities.* SSATP Working Paper No. 11. Washington D. C.: World Bank

MALMBERG CALVO, C. (1998). *Options for Managing and Financing Rural Transport Infrastructure.* World Bank Technical Paper 411. Washington, DC: World Bank

MARYSSE, L. (1998). *Social capital in the context of crisis-ridden Africa.* Antwerp: UFSIA, Center for Development Studies

MATLON, P. J. (1991). *Farmer risk management strategies: the case of West African semi-arid tropics.* Risk in Agriculture: Proceedings of the Tenth Agriculture Sector Symposium. HOLDEN, D. PRITCHARD, A. and HAZELL, P. (eds.). Washington D. C.: World Bank, pp.51-79

MAXWELL, S. (1999). *The meaning and measurement of poverty.* ODI Poverty Briefing 3. London: Overseas Development Institute

MAYOUX, L. (2001). Tackling the down side: social capital. women's empowerment and micro-finance in Cameroon. *Development and Change,* Vol. 32 (3). pp.435-464

MDG (2003). *Millennium Development Goals* [online]. Washington D. C.: World Bank [accessed 15 July 2004]. Available from www.developmentgoals.org

MIKKELSEN, B. (1995). *Methods for development work and research: a guide for practitioners.* New Delhi: Sage Publications

MINISTRY OF ECONOMY AND FINANCE (1996). Enquête Camerounaise auprès des ménages. (ECAM96), Vol. 1 Méthodologie. Yaoundé: Republic of Cameroon (MINEFI)

MINISTRY OF ECONOMY AND FINANCE (1999). *Annual statistics of Cameroon 1998.* Yaoundé: Republic of Cameroon (MINEFI)

MITLIN, D. and SATTERTHWAITE, D. (2001). Urban poverty: some thoughts about its scale and nature and about responses to it. In YUSUF, S. WU, W. and EVENETT, S. (Eds.). *The challenge of globalisation: international and local dimensions of development.* Washington D.C: World Bank, pp.193-220

MOLENAERS, N. (2003). Associations or informal networks? Social capital and local development practices. In HOOGHE, M. and STOLLE, D. *Generating social capital: civil society and institutions in comparative perspective.* New York: Palgrave Macmillan, pp.113-131

MORDUCH, J. and SHARMA, M. (2002). Strengthening public safety nets from the bottom up. *Development Policy Review,* Vol. 20, No. 5, pp.569-588

MORGAN, G. (1997). *Images of organization.* Thousand Oaks: Sage Publications

MORRIS, C. and ADELMAN, I. (1988). *Comparative patterns of economic development 1850-1914.* Baltimore: John Hopkins University Press

MOSSE, D. FARRINGTON, J. and REW. A. (eds.) (1998). *Development as process: concepts and methods for working with complexity.* London: Routledge

NAPHAPIET, J. and GHOSHAL, S. (1997). *Social capital, intellectual capital and organizational advantage.* Management Research Papers 97/6. Oxford: Oxford Centre for Management Studies

NARAYAN, D. (1999). *Bonds and bridges: social capital and poverty.* Policy Research Working Paper 2167. Washington D.C: World Bank

NARAYAN, D. and NYAMWAYA, D. (1996). *Learning from the poor: a participatory poverty assessment in Kenya.* Environment Department Papers. Participation Series 34. Washington D. C.: World Bank

NARAYAN, D. PATEL, R. SCHAFT, K. RADEMACHER, A. and KOCH-SCHULTE, S. (2000a). *Voices of the poor: can anyone hear us?* New York: Oxford University Press

NARAYAN, D. CHAMBERS, R. KAUL SHAH, M. and PETESCH, P. (2000b). *Voices of the poor: crying out for change.* New York: Oxford University Press

NARAYAN, D. AND PETESCH, P. (2002). *Voices of the poor: from many lands.* New York: Oxford University Press

NATIONAL ROADS BOARD (2004) [online]. *NRB Profile*. Lusaka: National Roads Board [accessed 12 July 2004]. Available from www.nrb.org.zm

NEEFJES, K. (1999). *Oxfam GB and sustainable livelihoods: lessons from learning.* Based on papers presented at the DFID Natural Resource Advisers Conference

NELSON, Political Science Resource Centre (2001). *Glossary of terms* [online]. [accessed 1 July 2004]. Available from www.nelson.com/nelson/polisci/glossary.html

NJENGA, P. (2001). *Local transport systems: key links to sustainable livelihoods.* IFRTD Background Note. London: International Forum for Rural Transport and Development

NORTH, D. C. (1990). *Institutions, institutional change and economic performance.* New York: Cambridge University Press

NORTON, A. and BIRD, B. (1998). *Social development issues in sector wide approaches.* London: Overseas Development Institute

ORTON, J. D. and WEICK, K. E. (1990). Loosely coupled systems: a reconceptualisation. *Academy of Management Review.* 15 (2), pp.203-223

OSBORNE, N. (1995). *Who should choose? Community participation in prioritising road network rehabilitation.* PLA Notes 23. London: International Institute for Environment and Development

PARGAL, S. HUQ, M. and GILLIGAN, D. (1999). *Social capital in solid waste management: evidence from Dhaka, Bangladesh.* Social Capital Initiative Working Paper No.16. Washington D.C: World Bank

PETRAS, J. (1997). El posmarxismo rampante. Una critica a los intelectuales y a las ONGD. *Viento Sur* 31, pp.35-46

PM PROFESSIONAL LEARNING (2002). *The complete project management course.* Reading: KnowledgePoint Ltd

PORTER, G. (1995). The impact of road construction on women`s trade in rural Nigeria. *Journal of Transport Geography,* Vol. 3, No. 1, pp.3-14

PORTER, G. (2002). Living in a walking world: rural mobility and social equity issues in Sub-Saharan Africa. *World Development* Vol.30, No.2, pp.285-300

PORTER, G. and LYON, F. (2003). *Groups as a means or an end? Building social capital for targeted development in Ghana.* Proceedings of the Association of American Geographers annual meeting, New Orleans, 5-8 March 2003

PRETTY, J. GUIJIT, I. THOMPSON, J. and SCOONES, I. (1995). *A trainer's guide for participatory learning and action.* London: International Institute for Environment and Development

PRETTY, J. and HINE, R. (1999). *Participatory appraisal for community assessment: principles and methods.* University of Essex: Centre for Environment and Society

PUGH, D. (ed.) (1998). *The Aston programme, volumes I, II and III.* Classic Research in Management Series. Dartmouth: Ashgate

PUGH, D. and HICKSON, D. (2000). *Great writers on organisations (the second omnibus edition).* Aldershot: Ashgate

PUGH, D. HICKSON, D. HININGS, C. and TURNER, C. (1968). Dimensions of organization structure. *Administrative Science Quarterly,* 13. pp.65-105

PUTNAM, R. (2000). *Bowling alone: the collapse and revival of American community.* New York: Simon and Schuster

PUTNAM, R.; LEONARDI, R. and NANETTI, R.Y. (1993). *Making democracy work: civic traditions in modern Italy.* New Jersey: Princeton University Press

RAHMAN, A. (1995). Participatory development: toward liberation of co-option. In CRAIG, G. and MAYO, M. (eds.). *Community empowerment: a reader in participation and development.* London: Zed Books, pp.24-32

RIVERSON, J. and CARAPETIS, S. (1991). *Potential of intermediate means of transport in improving rural travel and transport in Africa.* Technical Paper, AFTIN. Washington D. C.: World Bank

RODRIGUEZ-CARMONA, A. (2004). Development NGOs, local learning and social capital: the experience of CARE Bolivia in Villa Serrano. *Development in Practice,* Vol. 14, No. 3, pp.354-365

ROGALY, B. CASTILLO, A. and ROMERO SERRANO, M. (2004). Building assets to reduce vulnerability: microfinance provision by a rural working people's union in Mexico. *Development in Practice,* Vol. 14, No. 3, pp.381-395

RONDINELLI, D. A. (1983). *Development projects as policy experiments: an adaptive approach to development administration.* London: Methuen

ROSTOW, W. W. (1960). *The stages of economic growth: an anti-communist manifesto.* Cambridge: Cambridge University Press

SAMABI, K. (2000). Privatisation of mines: a new hope for Zambia. *Times of Zambia,* 7 February 2000

SCHEYVENS, R. and STOREY, D. (2003). *Development fieldwork: a practical guide.* London: Sage Publications

SCHULTZ, T. (1971). *Investment in human capital: the role of education and research.* London: Collier-Macmillan

SCOONES, I. (1998). *Sustainable rural livelihoods: a framework for analysis.* IDS Working Paper No. 72. Brighton: Institute for Development Studies

SHARPE, B. (1998). 'First the forest': conservation, 'community' and 'participation' in southwest Cameroon. *Africa,* Vol. 68, No. 1, pp.25-45

SIEBER, N. (1997). *An annotated bibliography on rural transport.* London: International Forum for Rural Transport and Development

SILVEY, R. and ELMHIRST, R. (2003). Engendering social capital: women workers and rural-urban networks in Indonesia's crisis. *World Development,* Vol. 31, No. 5, pp.865-879

SISULE, T. (2001). *Poverty in the eyes of poor Kenyans: an insight into the PRSP process.* Egerton University: Tegemeo Institute

SOCIAL EXCLUSION UNIT (2004). *What is the SEU?* [online]. [accessed 18 June 2004]. Available from www.socialexclusionunit.gov.uk/what_is_SEU.htm

SOHAIL, M. (2000). *Urban public transport and sustainable livelihoods for the poor: A case study of Karachi, Pakistan.* Loughborough: Water, Engineering and Development Centre

SORENSEN, C. (2000). *Social capital and rural development: a discussion of issues.* Social Capital Initiative Working Paper No. 10. Washington D. C.: World Bank

STARKEY, P. (2001). *Local transport solutions. People, paradoxes and progress.* SSATP Working Paper No. 56. Sub-Saharan Africa Transport Policy Program (SSATP) Washington D. C.: World Bank

STARKEY, P. (2002). Promoting the use of intermediate means of transport: vehicle choice, potential barriers and criteria for success. In TRL. *The rural transport policy toolkit.* PR/INT/246/02. Crowthorne: TRL Limited

STARKEY, P. ELLIS, S. HINE, J. and TERNELL, A. (2002). *Improving rural mobility: options for developing motorized and non-motorized transport in rural areas.* World Bank Technical Paper No. 525. Washington D. C.: World Bank

STEWART, F. and WANG, M. (2003). *Do PRSP's empower poor countries and disempower the World Bank, or is it the other way round?* Working Paper Number 108. Oxford: University of Oxford

STIGLITZ, J. E. (1998). *Towards a new paradigm for development: strategies, policies and processes.* Prebisch Lecture. Geneva: United Nations Conference on Trade and Development

SYCAMNIAS, E. (1999). *Evolution of organisational theory* [online]. Melbourne: Uplink Productions [accessed 17 June 2004]. Available from www.uplink.com.au/lawlibrary/Documents/Docs/Doc2.html

TONER, A. (2003). Exploring sustainable livelihoods approaches in relation to two interventions in Tanzania. *Journal of International Development,* 15 (7), pp.771-781

TONER, A. FRANKS, T. GOLDMAN, I. HOWLETT, D. KAMUZORA, F. MUHUMUZA, F. and TAMASANE, T. (2004). *An overview: projects and principles.* Goodbye to Projects? Briefing Paper No. 1. University of Bradford: Bradford Centre for International Development

TOURNÉE, J. (2000). *New challenges for employment intensive investments.* Proceedings of the 8th Regional Seminar for Labour Based Practitioners, 15-19 October 2000, Cairo, Egypt

TRL (2002). *The rural transport policy toolkit.* TRL Unpublished Report PR/INT/246/02. Crowthorne: TRL Limited

TRL (2003a). *Overseas road note 20: management of rural road networks.* Crowthorne: TRL Limited

TRL (2003b). *Activity patterns, transport and policies for the urban poor: urban mobility planning guidelines.* TRL Unpublished Report PR/INT/259/02. Crowthorne: TRL Limited

TRL (2004). *Overseas road note 22: a guide to pro-poor transport appraisal.* Crowthorne: TRL Limited

TROCHIM, W. M. K. (2002). *Deduction and induction* [online]. Ithaca: Cornell University [accessed 6 July 2004]. Available from: www.socialresearchmethods.net/kb/dedind.htm

UNCHS (1996). *An urbanising world: global report on human settlements.* United Nations Human Settlements Programme. Oxford: Oxford University Press

UNDP (1990). *Concept and measurement of human development*. Human Development Report 1990. New York: United Nations Development Programme

UNDP (1997). *Human development to eradicate poverty.* Human Development Report 1997. New York: United Nations Development Programme

UNDP (2003). *Millennium development goals: a compact among nations to end human poverty*. Human Development Report 2003. New York: United Nations Development Programme

UNESA (1992). *Agenda 21.* United Nations Conference on Environment and Development, Rio de Janeiro, Brazil, 3 to 14 June 1992. New York: United Nations Department of Economic and Social Affairs

UNESA, Division for Sustainable Development (2003). *Agenda 21* [online]. New York: United Nations Department of Economic and Social Affairs [accessed 10 April 2004]. Available from www.un.org/esa/sustdev/documents/agenda21/index.htm

UNESCO, Management of Social Transformations Programme (no date). *Sustainability as a concept of the social sciences* [online]. Paris: United Nations Educational, Scientific and Cultural Organization [accessed 18 June 2004]. Available from www.unesco.org/most/susdesc.htm

UNITED NATIONS (2004). *UN millennium development goals* [online]. New York: United Nations. [accessed 23 June 2004]. Available from www.un.org/millenniumgoals/MDG-Page1.pdf

UNIVERSITY OF MELBOURNE, Department of Geography (2003) *Course lectures* [online]. Sustainability in development projects. Melbourne: University of Melbourne [accessed 1 July 2004]. Available from www.geography.unimelb.edu.au/courses/unimelb-only/12508/12508-1.ppt

UNIVERSITY OF WASHINGTON, School of Aquatic and Fishery Sciences (no date) [online]. *Modelling concepts.* Seattle: University of Washington. [accessed 30 March 2004]. Available from www.fish.washington.edu/classes/fish458/lectures

UPHOFF, N. (1997). *Institutional capacity and decentralization for rural development.* Prepared for the Technical Consultation on Decentralization. Rome: Food and Agriculture Organization, 16-18 December 1997

UPHOFF, N. (1999). Understanding social capital: learning from the analysis and experiences of participation. In DASGUPTA, P. and SERAGELDIN, I. *Social capital: a multifaceted perspective*. Washington D. C.: World Bank, pp.215-249

URASA, I. (1990). *Women and rural transport*. Geneva: ILO

WATTAM, M. (1998). *Community participation in rural transport infrastructure.* Ardington: IT Transport Ltd

WEICK, K. E. (1976). Education organisation as loosely coupled systems. *Administrative Science Quarterly,* 21, pp.1-19

WEICK, K. E. (1982). Administering education in loosely coupled schools. *Phi Delta Kappan* 63, pp.673-676

WEICK, K. E. (1988). Enacted sensemaking in crisis situations. *Journal of Management Studies,* Vol 25, pp.305-317

WEICK, K. E. (1989). This week's citation classic – loose coupling: beyond the metaphor. *Current Contents,* No.12, p.14

WIDNER, J. and MUNDT, A. (1998). Researching social capital in Africa. *Africa,* Vol. 68, No. 1, pp.1-24

WILEY, Economics (no date). *Glossary* [online]. Milton, Australia: Wiley Publishers. [accessed 12 July 2004]. Available from www.johnwiley.com.au/highered/eco2e/micro/lect-res/glossary.html

WILSON, G.W. (1973). Towards a theory of transport and development. In Hoyle, B.S. (ed.) *Transport and Development*. London: Macmillan

WITKISS, M. HINE, J. and ELLIS, S. (2001). *The provision of rural transport services: an agenda for reform*. The Rural Transport Knowledge Base. Crowthorne: TRL Limited

WOOLCOCK, M. (1998). Social capital and economic development: towards a theoretical synthesis and policy framework. *Theory and Society* 27, pp. 151-208

WOOLCOCK, M. (2001). The place of social capital in understanding social and economic outcomes. *Canadian Journal of Social Policy Research,* Vol.2, No. 1, pp. 11-17

WOOLCOCK, M. AND NARAYAN, D. (2000). Social capital: implications for development theory, research and policy. *The World Bank Research Observer*. Vol. 15, No. 2, pp.225-249

WORLD BANK (1990). *World development report 1990: poverty*. New York: Oxford University Press

WORLD BANK (1993). *World development report 1993: investing in health*. New York: Oxford University Press

WORLD BANK (1994). *Zambia poverty assessment: Vol.1, Main Report*. Washington D.C: World Bank

WORLD BANK (1996a). *Sustainable transport: priorities for policy reform*. Washington D.C: World Bank

WORLD BANK (1996b). *Privatization in Africa: the Zambian example*. Findings 72. Washington D.C: World Bank

WORLD BANK (1999a). *Gender and transport: a rationale for action*. PREM Note. No. 14. Washington D.C: World Bank.

WORLD BANK (1999b). *World Development Report 1999/2000: entering the 21st century*. New York: Oxford University Press

WORLD BANK (2000). *World development report 2000/2001: attacking poverty*. New York: Oxford University Press

WORLD BANK (2001a). *Global economic prospects 2001: and the developing countries*. Washington D. C.: World Bank

WORLD BANK (2001b). *Education and development*. Education Advisory Service. Washington D. C.: World Bank

WORLD BANK (2002). *Integrated questionnaire for the measurement of social capital*. Social Capital Thematic Group. Washington D. C.: World Bank

WORLD BANK (2003a). *Reaching the rural poor: a renewed strategy for rural development.* Washington D. C.: World Bank

WORLD BANK (2003b). *Decentralization in Africa: emerging trends and progress.* Findings 229. Washington D. C.: World Bank

WORLD BANK (2004a). *The world development indicators 2004*. Washington D. C.: World Bank

WORLD BANK (2004b). *Global economic prospects 2004: realizing the development promise of the doha agenda.* Washington D. C.: World Bank

WORLD BANK (2004c). *Poverty reduction strategies and PRSPs* [online]. Washington D. C.: World Bank [accessed 17 July 2004]. Available from www.worldbank.org/poverty/strategies

WORLD BANK (2004d). *Living standards measurement study* [online]. Washington D. C.; World Bank [accessed 20 June 2004]. Available from www.worldbank.org/lsms

WORLD BANK, AIDS Economics (2004e). *Considering HIV/AIDS in developing assistance: a toolkit – HIV/AIDS and the transport sector* [online]. Washington D. C.; World Bank [accessed 12 July 2004]. Available from www.worldbank.org/aids-econ/toolkit/infra.htm

WORLD TRANSFORMATION, (1994). *Paradigms* [online]. [accessed 29 April 2004]. Available from www.worldtrans.org/essay/paradigm.html

APPENDIX A: QUANTITATIVE SURVEY INSTRUMENTS

A1 – VILLAGE LEVEL QUESTIONNAIRE (ZAMBIA)

A2 – HOUSEHOLD LEVEL QUESTIONNAIRE (CAMEROON)

A3 – TRANSPORT OPERATOR QUESTIONNAIRE (CAMEROON)

A4 – HOUSEHOLD LEVEL QUESTIONNAIRE (KENYA)

A5 – TRAVEL DIARY (KENYA)

A6 – PARTICIPATORY APPRAISAL CHECKLIST (KENYA)

APPENDIX A1: VILLAGE LEVEL QUESTIONNAIRE, ZAMBIA

Questionnaire No…… Date……

Village Name…….. District……

Road No…….. Interviewer……

No. Km from junction with secondary or main road……

1. Village Demography

1.1 Number of settlements……. Number of households……

1.2 No. of men[a]…… No. of women[a]…… No. of children[b]……

[a] 18 years old or over [b] Under 18 years old

2. Village Topography

2.1 Describe the village terrain: (tick one of the following)

Flat…… Rolling…… Hilly…… Mountainous……..

2.2 Describe the vegetation cover around the village: (tick on of the following)

Dambo (marsh)…… Open…….. Forested……..

3. Accessibility of educational facilities (If educational facility in village, write 0)

Type	Primary	Secondary	Technical	Kindergarten	Other
Km					

4. Accessibility of health facilities (If health facility in village, write 0)

Type	Health post	Clinic	Hospital	Other
Km				

4.1 a) Are there any mobile facilities that come to the village? Y/N

b) What are these facilities?……

c) How frequently do they visit the village……/……/……(wk/mth/yr)

5. Transport Services

5.1 How many motor vehicles travel along the road:

a) In peak market/harvest time? (specify which months).....

.....

b) The remaining dry season?.....

c) Wet season (December to March).....

5.2 How many bicycles use the road a day, on average?.....

6. Road Condition

6.1 What are the main problems of the village feeder road? Are they:

a) Bumpy, rough and uneven, giving an uncomfortable journey Y/N

b) Slippery when wet Y/N

c) Boggy when wet (vehicles get stuck in mud) Y/N

d) Difficult water crossing (culvert or bridge, broken or unsafe) Y/N

e) Road is too narrow for trucks to pass Y/N

f) Road is too steep or too bendy Y/N

g) Other Y/N

6.2 What problems do transporters complain about the feeder road.....

.....

.....

6.3 When, and what type of road construction or maintenance activity was last undertaken?

.....

.....

6.4 a) Are any regular transport services available for people using the road? Y N

b) If so, how frequently do vehicles pass per day/week/month

...../..../...(day/wk/mth)

7. Farming and Economic Activity

7.1 What are the main crops grown? List in order of importance:

……..

……..

……..

……..

……..

7.2 What are the main sources of economic activity in the village? Rank in order of importance:

Food Crops …… Other crops ……
Local employment…… Fishing……..
Trading…… Cattle rearing……..
Poultry…….. Marketing……
Beer brewing…… Charcoal Making ……

Other activities (specify) ……

8. Businesses in the village

8.1 What commerical business activities take place in the village (Give number of each activity):

General shop…… Grinding mill ……

Bar…… Mechanic ……

Brick making……. Commercial farm ……

Transport enterprise …… Beer brewing ……

Other (please specify)……

9. Places of worship

9.1 What places of worship are represented in the village?……

……

……

10. Availability of Goods and facilities

10.1 Indicate whether the following have improved, remained the same or worsened over the last ten years (tick as appropriate)

	Improved	Remained same	Worsened
Availability of consumer goods			
Availability of agricultural inputs			
Household food supply			
Quality of education			
Availability of medicine at health centre			
Condition of roads			
Ability to purchase goods at shops			
Transport of goods			
Transport of people/ bus service			
Family health			

11. Extension and NGO Services

11.1 List any extension or NGO services that come into the village:

.....

.....

.....

12. Major Events

12.1 Over the last five years, have there been any major events that have adversely or beneficially affected the village (e.g. floods, heavy rain, new construction, new employment, returning migrants)?

Please describe any events which have had a particular impact:

Event	Year

APPENDIX A2: HOUSEHOLD QUESTIONNAIRE, CAMEROON

Interview start time…….. Interview finish time……..

Questionnaire No…….. Date……

Village Name…… District……

Interviewer……

1. Household Size and Composition

1.1 Details of the head of household

Sex: M/F Age: <30 30-40 40-50 50-60 60>

Marital Status: single/married/divorced/widowed/separated

1.2 Household composition (including interviewee)

No. of men over 18 yrs ……No. of women over 18 yrs ……

No. of children under 18 years……..

2. Household Livelihood and income

2.1 Main source of livelihood (tick all that apply):

Crops for home consumption…… Crops for sale…… Fishing……

Livestock…… Trading…… Beer brewing……

Charcoal manufacture…… Remittances ……..

Pensions or savings……

Formal employment (state what)……

Other trade (eg. Building)……

2.2 Can you give a rough estimate of your household's income range, in frs (CFA), during the last twelve months (tick *one* of the following)?

< 10,000	.....	50,000 - 100,000	.....
10,000 - 25,000	.....	100,000 - 150,000	.....
25,000 - 50,000	.....	> 150,000	.....

3. Crops & Food

3.1 What Crops are grown by your household? Do you grow these as food for your family, for sale or both?

Crop	For home consumption	For sale
Maize		
Cassava		
Yams		
Groundnuts		
Millet		
Beans		
Bananas		
Rice		
Other (state which)		

3.2 Estimated no. of meals per day: Wet season……..

Dry season……...

4 Livestock and Dairy Products

Can you give the numbers of livestock and poultry owned by your household and details of any any eggs or dairy production?

Cattle…… Pig …… Goats/Sheep……

Donkeys…… Poultry……

Milk (litres)……/…… (wk/mth) Eggs (No.)……/…… (wk/mth)

Marketing

Crop/Produce sales:

In the last two years, which items were exchanged (state type of produce and units) for:

a) Cash? ……...

b) Barter? ……

If answered b) Barter, what items are received? ……

……

How was produce marketing undertaken in the last two years (tick appropriate)?

a) Trader visits to village……

b) Household member takes goods to urban market……

c) Both a) and b)……

What means of transport is mainly used to convey produce away from village? (tick all that apply)

Foot…… Bicycle…… Motor vehicle……

Ox-cart/ Ox sledge …… Boat……

Are there any cash transactions that you can remember? Give examples of prices received in the last harvest (1999) season received for crop sales:

Location[a]	Month	Commodity	Units	Price	Price unit

[a] *Where the transaction took place – enter "V" for village or "M" for urban market*

Employment

6.1 How many members of the household were employed in the last two years or are currently employed?

No. of males	No. of females	Type of employment

7. What are your transport requirements outside the village?

Destination	Roughly how many journeys (*round trips*)? State whether per day, week, month or year.	Time taken for *one way trip*	Distance for one way trip (Km).	Who makes these trips? Tick whether men (M), women (W), boys (B) and/or girls (G)				Mode of transport (See Key)
				M	W	B	G	
Travel to market: to sell								
To buy								
Travel to grinding mill								
Education: Primary								
Secondary								
Transport of harvest								
Health – travel to: Health post								
Local clinic								
Hospital								
Social visits (weddings, funerals, visits to friends and relatives)								
Religion								
Travel to employment								
Travel to farms								
Use of post office/ public telephone								
Collection of farm inputs								
Other								

Key: 1 walk, 2 Bicycle, 3 Motorcycle, 4 Car, 5 Bus, 6 Truck, 7 Boat, 8 Ox-drawn cart, 9 Tractor, 10 Other, 11 Delivered

8. Motorised Vehicle Journeys

Can you give actual examples of typical fares for motorised journeys?

Origin	Destination	Distance (Km)	Fare (current last year's)	Mode[b]

9. Goods Transport Charges

Can you give some examples of goods transported (e.g. cassava, beans, fish, maize, etc)?

Mode[b]	Goods	Units	Quantity	Charge/unit	Name of trip destination or distance (km)

[b] Key: 1 walk, 2 Bicycle, 3 Motorcycle, 4 Car, 5 Bus, 6 Truck, 7 Boat, *8 Ox-drawn cart, 9 Tractor, 10 Other*

10. Trip Satisfaction

Availability of transport services:

a) How far away (Km) is the nearest point where you would expect to get transport?.....

b) On average how many transport services are there a day?

Wet season.....

Dry season.....

Road condition:

Is the road to your village easily passable?

	Wet season	Dry season
Always		
Sometimes		
Rarely		
Never (totally impassable)		

Are you willing to give voluntary labour to improve the road with the help of an engineer? Y / N

Could you give a reason for your answer? .....

.....

.....

11. Ownership of Assets

11.1 What kind of property or assets does your household possess (e.g. radio, bicycle, fishing net, etc)?

.....

.....

11.2 During the last season, did the household employ any non-household labour on the farm? Y / N

11.3 Did the household use any of the following modern farm inputs during the last season?

a) Chemical fertiliser Y / N b) Special seeds Y / N
c) Insecticides/pesticides Y / N

11.4 a) During the last two years did the household have any contact with any agricultural extension services or NGO's ? Y / N

If yes what was the extension service or NGO ? .....
b) Was the contact at the village ? .....
Or did contact take place outside the village ? .....

11.5 Did the household receive any agricultural credit Y / N

What is the name of the head of your household? .....

APPENDIX A3: TRANSPORT OPERATOR QUESTIONNAIRE, CAMEROON

Interview start time..... Finish time.....

Questionnaire No. ..... Date.....

Location..... District.....

Road No..... Interviewer.....

General Questions

1. Type of vehicle (circle appropriate):

Motorcycle, Car, Pickup, Bus, Truck, Tractor, Boat, Other (what?).....

2. Does the vehicle have 4-wheel drive? Yes / No

3. Make of vehicle.....

4. Number of passengers:

Maximum capacity of vehicle .....

Actual number of passengers carried .....

5. Goods load (kg):

Maximum permitted load .....tonnes

Load normally carried .....tonnes

Vehicle operation and nature of business

6. What is the relationship between the driver and the owner of the vehicle?

i) Driver owns the vehicle .....

ii) Driver is a relative of the owner .....

iii) Driver has no blood relationship with owner .....

7. What sort of organisation or individual owns the vehicle?

i) A family ..... ii) Co-operative ..... iii) Transport company .....

iv) Partnership ..... v) Local businessman .....

vi) Other (what?) .....

8. Has the owner got any other vehicles? Yes / No

- If Yes, how many? .....

9. Is the driver a member of an association? Yes / No

Vehicle operating costs and maintenance

10. Does the driver have to pay to park the vehicle? Yes / No

11. If so, how much does he have to pay? ..... frs (CFA)

12. What fuel does the vehicle use (Circle appropriate)? Petrol / Diesel

13. What is the cost *per litre* of fuel? ..... frs (CFA)

14. How much is spent on fuel? ..... frs (CFA) per day / week / month

15. How much is spent on maintenance? ..... frs (CFA) per day / week / month / year

16. How regularly is maintenance carried out?

i) Daily ..... ii) Weekly ..... iii) Monthly .....

iv) When the vehicle develops a mechanical problem .....

v) Other (Please state) .....

Vehicle utilisation

17. How long ago was the vehicle last out of service? ..... days / weeks / months

18. What was the reason?

Waiting for spares ....

Waiting for repairs ....

Routine maintenance ....

Lack of demand for passengers ....

Lack of customers for goods transport ....

Seasonal impassability of roads ....

Vehicle off road only during non-working hours ....

Other reasons (please state)

.....

19. For how long did it remain out of service? ..... days / weeks / months / years

20. How long does the driver expect to spend loading his vehicle before he moves off?

.....hours .....minutes

21. Does he move (tick appropriate): Only when the vehicle is full?.....

or Before the vehicle is full?.....

22. How many days in the week does the driver work? .....

Vehicle Age and Condition

23. When it was bought was the vehicle new..... or second hand.....?

24. How old is the vehicle (from the date the owner bought it)? .....

25. If you wanted to sell the vehicle how much would you be prepared to receive for it? ..... frs (CFA)

26. How much did the owner pay for the vehicle? .....frs (CFA)

Use of Feeder Roads

27. Does the driver travel on the feeder roads? Yes / No

28. If so, does he travel on them (tick appropriate)

In the dry season? .....

In the wet season? .....

Both in dry and wet seasons? .....

Feeder Road Problems

29. Which of the following problems does he find on the feeder roads? Rank in order of importance (e.g. 1 is biggest, 2 is second biggest problem):

i. There is not enough demand to travel along the road (he won't get a return load)……

ii. If his vehicle breaks down no one will come to his assistance and he will find this costly…….

iii. He is unfamiliar with the quality of the road and fells insecure about driving down it……

iv. The road is very rough and bumpy, resulting in a high maintenance cost bill……

v. In the wet season the roads get very muddy and the vehicle gets bogged down…….

vi. The wooden bridges and culverts are very unsafe and he does not like to drive over them.....

vii. In the wet season the roads are very slippery and his vehicle might slide off going up or down hills.....

viii. Fuel consumption is high due to frequent gear changes necessitated by the rough nature of the road.....

ix. There is too much police control .....

Possible Feeder Road Improvements

30. If he could make improvements, but money was limited, what would he do to the road? Rank in order of importance the following options:

i. Make the surface smoother .....

ii. Raise embankments .....

iii. Repair erosion on the hills .....

iv. Improve water crossings .....

v. Put gravel on the road .....

vi. Other .....

.....

.....

31. Routes: Can the driver give details of fares and distances and seasonality of operations?

From	To	One way distance (km)	Fare (frs CFA)	One way travel time (days, hours or minutes)	No. of trips per week	Type of road[a]	When used[b]

[a] Enter: TR - Trunk road, MR - Main road, P – Primary feeder , S – Secondary feeder, TF – Tertiary feeder
[b] Enter: W Wet season, D – Dry season, B – Both season

APPENDIX A4: HOUSEHOLD QUESTIONNAIRE, KENYA
(administered by KENDAT in the <u>first</u> phase of surveys)

1. Questionnaire Number----------

2. Name of the interviewer ----------

3. Name of study zone: (P*lease cycle as appropriate):*

(a) Mwea (b) Lari (c) Magadi (d) Busia (e) Kalama

4. Name of sub-location or village ----------

5. Date of Survey----------

2. Background household data

2.1 Name of the respondent:----------

2.2 Male/Female *(Please circle as appropriate)*

2.3 Relation of interviewee to household head *(Please circle as appropriate)*

(a) Head (b) Wife (c) Daughter (d) Son (e) other (specify)

2.4 What is the size of the nucleus family of the respondent?----------

2.5 Age of respondent: (Please circle as appropriate)

(a) 13-20 (b) 21-30 (c) 30 and above

2.6 Level of formal education (circle as appropriate)

(a)Primary (b)Secondary (c)Post secondary (d) Other

3. Livelihood/economic data

3.1 What are the main sources of income (or subistence) for the household?
(*Select from the following options and use 1,2,3 ..to indicate order of importance*)

- Farming
- Trade
- Jua Kali activities
- Transport service provider (eg, Boda boda)
- Professional services (eg, teacher, doctor, accountant)
- Other (specify) ----------

3.2 Does the household have access to land? (a)Yes (b)No

3.3 If yes, what type of access? (Tick as appropriate)

a) Owns the land (b) rents (c) Commercial

3.4 What area is under cultivation? (*in acres*)

3.5 What are the main crops grown? List in order of importance:

a) b)
c) d)

3.6 Which crops are grown for <u>domestic consumption</u>? List in the order of importance

a) b)
c) d)

4. Agricultural marketing activities:

4.1 What crops are grown for marketing? List in order of importance as an income source

a) b)
c) d)

4.2 Marketing

CROP (transfer crops listed in 4.1 above)	Total Acreage grown	Average amount sold per year (Kg)	Price/unit or per Kg	Means of Transport to market/collection point	Distance to market (*specify in either km or time taken*)	Loading capacity of Means of transport used/trip	Who transports regularly (adult male female or boy girl)

Other Comments----------

4.3 Livestock and Transport

Type of livestock owned by household	Number owned	Products are marketed from livestock	Quantities marketed (*units per month*)	Unit price (Kshs)	Distance to markets (km)	Means of Transport used	Who transports regularly (adult male female or boy girl)
Cattle							
Goats							
Sheep							
Chicken							
Pigs							
Other							

Other Comments----------

4.4 Transport of Farm Inputs

Type of farm input	Quantity transported per year	Distance from source (km)	Mode used (see key under the table)	Unit price	Distance to markets	Who transports regularly (adult male female or boy girl)
Fertilisers						
Manure						
Livestock fodder						
Livestock water						

1 = bicycle 2 = pack animal 3=animal cart 4=human porterage

5. Ownership and use of Means of Transport

5.1 Does the household own any of the means of transport listed below

Means of Transport	How the Means of transport is used	Who owns the means of transport	Who uses it in the household (Man/woman or boy/girl)	Where was it bought?	Number of years owned	Cost of purchase
Motor vehicle						
Motor cycle						
Bicycle						
Animal cart						
Pack animal						
Wheelbarrow						
Hand cart						

5.2 <u>If household does not own</u> any means of transport what is the reason?

a) Too expensive b) have no need for means of transport

c) Easier to hire when need arises

d) Others (specify): ----------

5.3 In your opinion how do you rank the importance of the following means of transport in regard to household farming activities?
(Put 1,2,3 to indicate order of importance)

(a) Animal cart (b) Bicycles

(d) Motor vehicles d) headloading backloading

5.4 In your opinion how do you rank the importance of the following means of transport in regard to household crop marketing activities?

(Put 1,2,3 to indicate order of importance)

(a) Animal cart (b) Bicycles

(d) Motor vehicles d) headloading backloading

6. Distance to commonly used facilities and services

6.1 What is the distance (specify in km or travel time) from the household to the nearest educational facilities?

Primary	Secondary	Technical	Kindergarten	Other

6.2 What is the distance (km or travel time) from the household to the nearest of these facilities?

Shopping centre	Market	Admin services	Municipality	City

6.3 What is the distance to the nearest health facilities?

Health post	Clinic	Hospital	Other

6.4 What is the main source of domestic water for the household?

(a) River b) well (c) Borehole d) Communal tap (e) Has tap at home

6.5 What is the distance (km or time) to this source?

6.6 How many trips are made to collect water per day?

6.7 Does the water source change from one season to another? a) Yes b) No

6.8 Does this affect amount of time taken to fetch water from one season to another? Please explain

.....

.....

6.9 What is the source of household fuel-wood?

(a) On farm source (b) Forest c) Purchased from the market (d) other (specify

.....

.....

.....

6.10 What is the distance to this source of fuel-wood?

6.11 How many trips are made to collect fuel-wood per week?

6.12 How far is the nearest motorable road from your homestead?

a) Less than 1 km b) 2-3 Km c) 4-5 km d) Over 5 km

6.13 How many motor vehicles travel on the nearest motorable road (Tick or fill in as appropriate)

Means	Nil	1 to 2/ day	3 to 6/day	6 to 10 day	Is it for passenger or goods transport?
Tractor/trailer					
Pick-up					
Lorry					
Bus					

6.14 Other comments ----------

6.15 What do you consider to be the most serious transport problems in the area?

_____

_____

_____

6.16 In your opinion have the transport services improved/worsened in the last 3-5 years? a) Yes b) No

6.17 If yes, in what way?

_____

_____

APPENDIX A4: HOUSEHOLD QUESTIONNAIRE, KENYA
(administered by KENDAT in the <u>second</u> phase of surveys, including the candidates social trip-making questions)

1. What are your transport requirements inside/outside the village:

	Destination	Roughly how many journeys (*round trips*) made per month?	Time taken for *one way trip* (minutes)	Distance for one way trip (Km).	Cost of journey for one way trip (shillings)	Duration of stay at destination (hours)	Who makes these trips? Tick for men (M), women (W), boys (B) and/or girls (G)				Mode of transport (See Key)
							M	W	B	G	
INCOME GENERATION	Travel to farms										
	Collection of farm inputs										
	Transport of harvest										
	Travel to market: To sell										
	To buy										
	Travel to town										
	Travel to formal employment										
	Travel to informal employment										
HUMAN CAPITAL	Travel to grinding mill										
	Education: Primary										
	Secondary										
	Tertiary										
	Health – travel to: Health post										
	Local clinic										
	Hospital										
OTHER	Use of post office/ public telephone										
	Other (please state):										
	1										
	2										

Key: 1 Walk, 2 Bicycle(Own) 3bicycle(Boda) 4 Motorcycle, 5 Car (owned by household), 6 Bus/ matatu, 7 Truck, 8 Boat, 9 Animal cart, 10 Tractor, 11 Other,

	Destination	Roughly how many journeys (*round trips*) made per month?	Time taken for *one way trip* (minutes)	Distance for one way trip (Km).	Cost of journey for one way trip (shillings)	Duration of stay at destination (hours)	Who makes these trips? Tick for men (M), women (W), boys (B) and/or girls (G)				Mode of transport (See Key)
							M	W	B	G	
COMMUNITY ASSOCIATIONS	Farmers group/co-operative										
	Religious meeting										
	Women's group										
	Village committee										
	Burial society										
	Parent Teacher Association (PTA)										
	Credit association										
	Other (please state)										
	1.										
	2.										
SOCIAL VISITS	Weddings										
	Funerals										
	Visiting friends										
	Visiting relatives										
	Place of worship										
	Leisure activities										
	Sport activities										
	Other (please state):										
	1.										
	2										

Key: 1 Walk, 2 Bicycle, 3 Motorcycle, 4 Car (owned by household), 5 Bus, 6 Truck, 7 Boat, 8 Animal cart, 9 Tractor, 10 Other.

2. Household Income and expenditure

2.1 How much of household earnings and expenditure are derived from the following?

Monthly Total Household Earnings from: Ksh		Monthly Household Expenditure on: Ksh	
Agriculture		Food	
Livestock production		Rent	
Self-employed Trading		Transport	
Regular salaried employment		Utilities (water, gas, elect)	
Casual wage work		Schooling	
Rent		Medical	
Remittances		Clothing	
Pension		Remittances	
Other (specify)		Social	
		Other (specify)	
TOTAL			

2.2 Please give a rough estimate of your household's income range, in Kenya Shillings, during the last three months (tick *one* of the following)?

1) < 1,000 ..... 4) 6,001 - 9,000 .....

2) 1,001 – 3,000 ..... 5) 9,001 - 12,000 .....

3) 3,001 - 6,000 ..... 6) > 12,000 .....

3. Indicate whether the following have improved, remained the same or worsened over the last three to five years (tick as appropriate)

Situation	*Improved*	*Remained same*	*Worsened*
Availability of consumer goods			
Availability of agricultural inputs			
Agricultural performance			
Household food supply			
Household water supply			
Distance to schools			
Distance to health centres			
Condition of roads			
Access to markets			
Transport of goods			
Transport of people/ bus service, boda boda			
Access to health services			
Access to credit			
Security			

4. Household Access to Financial Resources

NB to Enumerators: This section tries to capture the household's comments on access to credit and other financial resources.

4.1 What is the quickest way/s available to raise finance in your household?

.....

4.2 Are there any savings and credit facilities in your community? Yes [ ] No [ ]
Don't know [ ]

4.2.1 If yes, which are they?

4.2.2 If such savings and credit facilities are not available, do you think they are necessary?

.....

4.3 Credit providers: are there any groupings that give loans?.....

.....

4.4 Have you ever sought credit? Yes [ ] No [ ]

4.4.1 If yes, from whom did you seek the credit?

4.4.2 Was the credit given to you? Yes [ ] No [ ]

4.4.2 If yes how much was the credit given?

4.4.5 For what purpose(s) did you seek the credit?

4.4.6 What are the terms of repayment?

.....

.....

4.4.7 What are the conditions that one needs to fulfil in order to acquire the credit/ loans?

.....

.....

5. Does your household provide voluntary labour for any of the following (please tick all that apply and give reasons)

		Reason:
Road improvements	.....	.....
School	.....	.....
Health centre	.....	.....
Neighbourhood farms	.....	.....

Other (please state).....

Study area _____

Name of respondent _____

Age _____

Gender Male [ ] Female [ ]

APPENDIX A5: TRAVEL DIARY, KENYA

TRAVEL DIARY COVER SHEET
THE RURAL TRANSPORT SERVICES PROJECT FOR KENYA
(to be filled in by survey enumerator)

HH Surname. . . . . HH Head's First Name: . . . . . .

Gender . . . . . Age . . . . . .

(Put * asterisk next to household members who did their own travel diary recording and note at the bottom of this page who was the main recorder/s in the family who helped others fill out their travel diary)

Family members in Order of Age:

No	Name	Relationship to Head	Gender	Age	Main Occupation
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					

TRAVEL DIARY HH Survey No. HH member name: Date: Day of the week:

	TIME OF DAY Before 6am	6am – 9am	9am-12pm	12pm-3pm	3pm-6pm	6pm-9pm	9pm-12am
TRAVEL WHERE							
Within locality							
Within area							
Outside area							
Long distance							
TRAVEL PURPOSE (list in order of importance)							
INCOME-EARNING (None = 0, or list income source)							
TRAVEL MODE							
TRAVEL TIME (minutes)							
TRAVEL WITH WHO							
Family member/s (list numbers)							
Non-family (how many people)							
Alone							
FURTHER REMARKS							

APPENDIX A6: PARTICIPATORY APPRAISAL CHECKLIST, KENYA
(The checklist was developed for KENDAT, but PA was not actually administered in the case study)

Major Theme	Participatory Methods	Information	Informants

Transport and Mobility	• Mobility mapping	• How do community members access employment opportunities, health centres, markets etc? Where do they travel on a routine basis? Problems in travel?
		• How do community members access friends, family, leisure activities, social networks? Where do they travel on a routine basis? Problems in travel?
		• Establish the following from respondents:
		  • Mode
		  • Distance to destination
		  • Cost of transport service and social service
		  • Frequency of transport service and social service
		  • Duration of trip
			• Community members:
			  • Women 15-25 (non-school children)
			  • Women 25-50
			  • Men 15-25 (non-school children)
			  • Men 25-50

		• Social trip-making: who are people's most important contacts for support during times of crisis? Who is the nearest relative and where are they located? Is it important to keep in touch with them and how? Who would they contact first under different circumstances and why? (i.e. Following the birth of a child, crop failure, death in the family). Who would people contact for finding jobs and business opportunities and how would they be contacted? Are trips important in contacting these networks or are they only a minor component? What returns do people get on making trips for a social purpose? Do they get immediate gratification, or are the benefits acquired over time? Think in the context of social capital as crisis *and* opportunity.	• Community members
	• Spider diagram	• Where do people travel to in any given day/week? Start with their home and draw where they travel to, mode of travel, distance and duration of journey, frequency of travel to that particular destination. Useful triangulation tool and means of establishing mobility patterns.	• Community members
	• Flow diagram	• Cause and effect: start with a problem statement i.e. Transport services are too expensive. Continue with links to cause and effect i.e. Why is	• Community members

	• Time line	transport too expensive? What expenditure people have to sacrifice in order to pay for daily transport? What livelihood strategies are employed to avoid costly transport i.e. Trade off between cost of journey and length of journey (bus vs. walking) etc. • Historical development of transportation in Kenya and survey areas – public/private transport services, expansion and demise etc. Impact on the rural poor - livelihood strategies. Changes in mobility/key transport services over time.	• Local transport authorities
Livelihoods	• Semi-structured interviews	• How do people make choices about where they are going to locate in a city? What are the criteria they use: • Property rental costs • Proximity to relatives/friends • Proximity to employment • Proximity to schools (for children) • Proximity to health centres • Proximity to markets (household supplies) • Proximity to leisure pursuits	• Community members
		• Government and other institutions: What role do central government and local authorities (of transport, health, education, employment sectors) have in ensuring reasonable access to different social services and employment opportunities? What measures do they take to guarantee basic regulation and servicing of transport services or vehicle ownership i.e. Provision of credit, road safety engineering measures to prevent road traffic accidents involving school children etc. What is the policy development process? How policy derived, and how do policy changes come about? In what way can transport better inform this process?	• Government Ministry and local authority representatives
		• Transport service providers and operators: How do they ensure user charges remain affordable, and vehicle condition satisfactory? What are their operating constraints, with respect to institutional frameworks etc? How they're *supposed* to operate and how they're *actually* operating.	• Transport service operators i.e. Matatus etc

	• Flow diagram	• Cause and effect: start with a problem statement i.e. Distance to school is prohibitive. We live close to the market where rent is cheap and I can work late and be near home, but my children have to travel across town to get to school and are punished for their lateness. They also help with selling goods at market after school but have no time for homework or extra curricular activities. As a result, my eldest son is doing the same low paid work as me because his education is poor. Impacts on job market – formal vs. informal employment sector.	• Community members

	• Venn diagram	• What institutions are in place to influence capital asset acquisition and livelihood strategies of the rural poor? What institutions do they have access to and how strong are the links? What are the horizontal and vertical links? How does transport directly/indirectly link with these bodies?:
		  • Central government
		  • Local authorities
		  • Credit institutions (loans for acquisition of IMTs)
		  • Community/sports/church/youth groups
			• Community members
			• Community institutions i.e. Village council, farmers co-operative, women's groups etc
			• Local authority representatives
			• Transport operators and unions

Priority concerns	• Priority ranking	• Derived from spider diagrams/matrix ranking. Compare different criteria such as: Rows: transport modes Columns: cost/frequency/impact on health/duration – of travel per mode • Ranking can be used to determine the criteria that people put on different things i.e. Different modes of transport/access to different services/livelihood problems etc. Sometimes the distribution of ranking is more important than the rank or score itself.	• Community members
	• Pair wise ranking	• Pairwise ranking is also a means of prioritising: respondents define their own criteria and rank the preferred variable from a pair of variables.	• Community members
	• Causal impact analysis	• Whatever has been identified as a key constraint in the priority ranking should be discussed around causal impact analysis: cause and effect of the problem, existing strategy and possible solutions.	• Community members

APPENDIX B: QUALITATIVE DATA ANALYSIS WORKSHEETS

Zambia: Northern Province - Health Care

Village	Frequency	Distance	Cost of Service	Gender split	Comments
Ngalande		2km to RHC			Ngalande characterised as having better food security & hectarage of maize compared w. other villages. Drugs are unavailable. Production of monocrop ie. Cassava leads to malnutrition. If there is no spare cash, and someone is ill, they will not go to RHC b/c belief that RHC will only treat in return for cash. Do not use trad medicines either.
Chansamilando		1km to RHC			Chansamilando characterised as a 'poor' village in terms of food security.
				men	Paying fees at the RHC does not guarantee acquisition of drugs. User fees are bearable.
Kapoma		3km to RHC			Kapoma characterised as having good water provision.
				men	One resident of the village visits RHC daily.
Kanseke		7km to RHC			Kanseke characterised as having v. good food security, quite wealthy.
				men	Even in medical emergencies (ie. Complicated pregnancies) the ambulance (from the friary) doesn't go to Kanseke b/c 7km road to the village is impassable.
Chalabesa Gen			Outpatients: 5-14yrs: k500/half gallon 15-60: k1000/1gallon over 60: free under 5: free Admissions: wk 1: k1500/1&half gallon wk 2: k1000/1 gallon wk 3: k500/half gallon		The road from the jn at Mpika-Kasama road to Chalabesa RHC is 32 km long It took 2hrs to travel by car. V. little traffic observed. Takes 6hrs to walk from Chalabesa to the main road. Chitemene practised. Chalabesa has a convent, mission, churches, RHC and Basic school (Grade 9). RHC is w/out doctor, electricity, vehicles. Most patients travel by bicycle. The RHC catchment is 45 km Outreach progs held x3/wk @ clinic, x1/mth @ health post inc UCI, anti-natal. Priests have a vehicle, used in emergencies. Drug kits received every 2mths. Nearest hospital in Mpika. RHC serves 18,000 Chalabesa is at risk of HIV b/c Mpika is on road/rail jn, rural-urban influence.
Mukuka Mfumu		30km to RHC			Nearest RHC is in Mwika (19km) but in Chinsali District, or Mumba (25km), most people travel on foot to Malole b/c better service. Nearest hospital in Mungwi. People only travel to RHC in emergencies b/c high admission/transport costs and takes v. long time, so mortality is v. high.
				women	All the possible RHC's (Malole, Mungwi, Mumba) are too far away.
Muchaka		RHC: 21km		men	There is a CHW in Chifulo, but doesn't cover this area. They used to collect drugs from the RHC. Now people start for RHC at 4am. The only drugs they provide are

Zambia: Northern Province - Education

Village	Frequency	Distance	Cost of Service	Gender split	Comments
Ngalande		2km to Basic school			Teachers stay for only short periods b/c are transferred - high turnover.
				women	Children are removed from school b/c high fees.
Chansamilando		1km to Basic school 80km to Secondary		men	Only children from rich families can afford to go to school. Those that lead subsistence lives in the bush remove children from school. There are plenty of school places, but few attend b/c high fees.
Kapoma		3km to Basic school 80km to Secondary		women	"If we had a market, we don't think our children would be chased from school". (yet this was ranked 4th in priority!)
Kanseke		7km to Basic school 80km to Secondary		men	Kanseke has a 'community school' b/c basi school located 7km away.
				women	B/c of lack of market for the produce, our children have been sent out of school
Chalabesa Gen			Grade 8 & 9: K25,000 per year Grade 2-7: K3,000 Grade 1: K3,000 (or 2 gallons millet)		Chalabesa Basic school (Grade 9). Nearest secondary school in Mpika. B/c people move into bush, kids are removed from school. Chalabesa inter-agency meeting: participants felt that farming is only economic activity that will enable them to send kids to school. Chalabesa school has 605 pupils & 5 teachers. Furthest village in catchment area is Njonjebeleka (19km). District office received school desks, but transporters would not bring them to Chalabesa so they were given to another Have a problem w. teachers refusing to be posted b/c poor RTS. Teaching is ineffective b/c classes are too large for no. teachers. 1999: only 200/605 pupils paid fees, hence ineffective teaching 2000: only 38/>600 have paid in cash/kind.

Zambia: Copperbelt Province - Agricultural Marketing

Village	Frequency	Distance	Cost of Service	Gender split	Comments
Chinondo	Lusaka: sweet pots annually. Nyenyezi/Mishi kishi: maize/sorghum mon & thurs Ibenga: veg daily	to Masaiti: 22km to Mishikishi: 28km to Ibenga: 18km	Chinondo-Masaiti/ Mishikishi: k1,000 o/w. k2,500 on rtn b/c produce already sold. Minibus to Luanshya: k2,000 o/w Lusaka: van: k1,500 per 25kg truck: k2,000 " Ibenga-Luanshya: k2-2,500/person k1,500/25kg bag		Large storage sheds located along Ibenga-Mishikishi Rd & @ Chinondo, but have been vacant since 1988 b/c Govt stopped providing agric inputs. Sheds lie empty, not even used for storage. ('white elephants')
				men	People do not have enough food b/c no ferts: "We are not talking about credit for fertilisers, if they just brought ferts here, those w. money would be able to buy" Produce is sold @ Ibenga b/c close, but only locals buy so receive only low prices. The best price is @ Nyenyezi Elderly were more emphatic on issue of lack of ferts. For livelihoods to improve - required fertiliser "The barter system is killing us b/c you don't realise cash".
				women	Most people grow maize w/out ferts. Those w. good harvests take produce to Mishikishi & Nyenyezi by bike. cassava is consumed, not sold. "Transporters make a lot of excuses. They say: our place is far, the road is bad. In the long run our produce or merchandise just goes to waste." Cost of transport is prohibitive. Once costs deducted - no profit! Lack of market structure is not prob. Even if local market, who would buy produce? Locals would only pay low price. - realistic view that market has to come w. road network & transport. Women also involved in beer brewing, men in charcoal production but insignificant & labour intensive - returns are v. poor.
Mboyonga		to Masaiti: 27km to Ibenga: 23km		men	There is no market infrastructure or consumer outlets. To access ferts, have to travel to Luanshya & hire truck

Cameroon: Adamaoua Province - Domestic Activities

Village	Water	Hammermills	Fields/firewood	Gender split	Comments
Hangloa	There is a community well & other privately owned wells which dry up in the dry season. Community well is under custody of traditional leader. Private wells are dug in family 'sares'. During v. harsh dry seasons, women fetch water on foot at stream 1-2km.				Rivers are seasonal & dry up, as does the community well. They have to walk further to streams where the water hasn't dried up. Women & children collect the water, they carry water on bicycles/push trucks from 1km away.
				Men	Men collect firewood from close by & transport it back on their heads/pushtruck. Firewood, land & cattle are in abundance here. Roads, water (in dry season), school (overcrowded) & RHC (insufficient supply of drugs) are all redundant. Criteria for wealth is the ability to feed oneself every day, no. of cows & farm size. >10 cows - rich, <10 cows - middle, those w/out cows are poor b/c have to work as cattle keepers to earn living.
Ngaoumbam	Not a major prob b/c abundant resource. Each Sare' has a private well, & there is a public well in sare of chief.		Collected from around village - not far.		There is a communal forest. Water is abundant even in dry season. Everybody has access to land - "those who have strength have more land". Men & women have equal access to land. Criteria for wealth is <half ha considered poor, 1 ha middle, and >1 ha rich. Those with 1-2 cattle are poor (or 0), those with 10-20 cattle are middle wealth and those with >20 are rich. Men are farmers or cattle keepers. Even if a woman is widowed she cannot undertake these activities. If young she will marry again, if old she will return to her family. There are no female headed households. 2 villagers are disabled & looked after by family. People immigrate to the village searching for piece-work. 1 villager is employed as a teacher in Ngaoun dere. He comes back to the village to pay his workers who keep the cattle. Nobody receives state pension. People immigrate to village from Chad for 2/3 mths to labour.

Cameroon: South Western Province - Transport Constraints

Village	Health	Markets	Domestic	Comments
Bavenga	CFA500-4000 depending on time or day & urgency.	Buea: 65km Muyuka: 9km RTS costs: CFA1,000 rtn w/out goods CFA100 per bunch plantain.	To transport maize to Muyuka with transporter: CFA500 per head single fare to Muyuka. They transport it first to Ikata (3-4km) then pay for vehicle to Muyuka. Batteries for radios cost: CFA300 for 2 Radio: CFA5-10,000	Bavenga is located along a feeder road branching from Muyuka to Munyenge. Road is v. stony. Road is considered a deteriorating resource. People used to use push trucks when rd was graded. Road to Bavenga in a v. poor state - 'screaming for maintenance' People have to walk 3-4km to Ikata to hire a car. Roads have not been maintained since 1985. Walking/headloading is primary mode of transport. No IMT's in Bavenga. No household has bicycle/motorcycle/car. In the forest zone there is not a culture of animal rearing so no cattle or donkeys. Hilly/rocky nature of the area prohibits use of animal draft b/c not conducive for hooves, also nothing to feed them. Men can carry 50kg load on heads, women 20-25kg. Transporters won't come as far as Bavenga b/c road condition (see photo of breakdown). Road to hilly for bicycles. There are x4 taxis in Ikata. Transporters are not regulated so charge the optimum that people will pay b/c little competition. Outreach personnel contact villagers through chiefs who make announcements, or over radio - programmes on HIV/AIDS, vaccinations, meningitis, also farming advice (ie. from SOWEDA NGO).Information on AIDS is also disseminated through schools w. leaflets & posters on STD's. Radios are scarce b/c battery life is short. People would rather have electricity. (SEE CAUSAL-IMPACT ANALYSIS FOR STRATEGIES).
Njima		Buea: 140km Ekondo Titi: >22km? Bekora: 7km Nganjo: 8km Bekora to Ekondo Titi: Dry: CFA400 Wet: CFA700		Road is in extremely poor state. Last maintained in 1986. To access farm and market, people travel on foot. No RTS. Men carry loads on their heads & women on their backs. Can be waiting for a vehicle on the main road between Ekondo Titi & Bekora for 3 days. X3/week there is a RTS which travels from Ekondo Titi to Bekora from where transport can be taken to Kumba & Buea.
				Njima has only 1 bicycle. Owner cannot use it often b/c poor rd. No push trucks in village. Even if they did have them, they could not be used to access farms b/c dilapidated foot paths.

APPENDIX C: PHOTOGRAPHS

Plate C1: Woman headloading firewood in Northern Province, Zambia

Plate C2: Transit of charcoal by bicycle in Copperbelt Province, Zambia

Plate C3: Ox-cart in Northern Province, Zambia

Plate C4: Private transporters queuing for business in Luwingu, Northern Province, Zambia

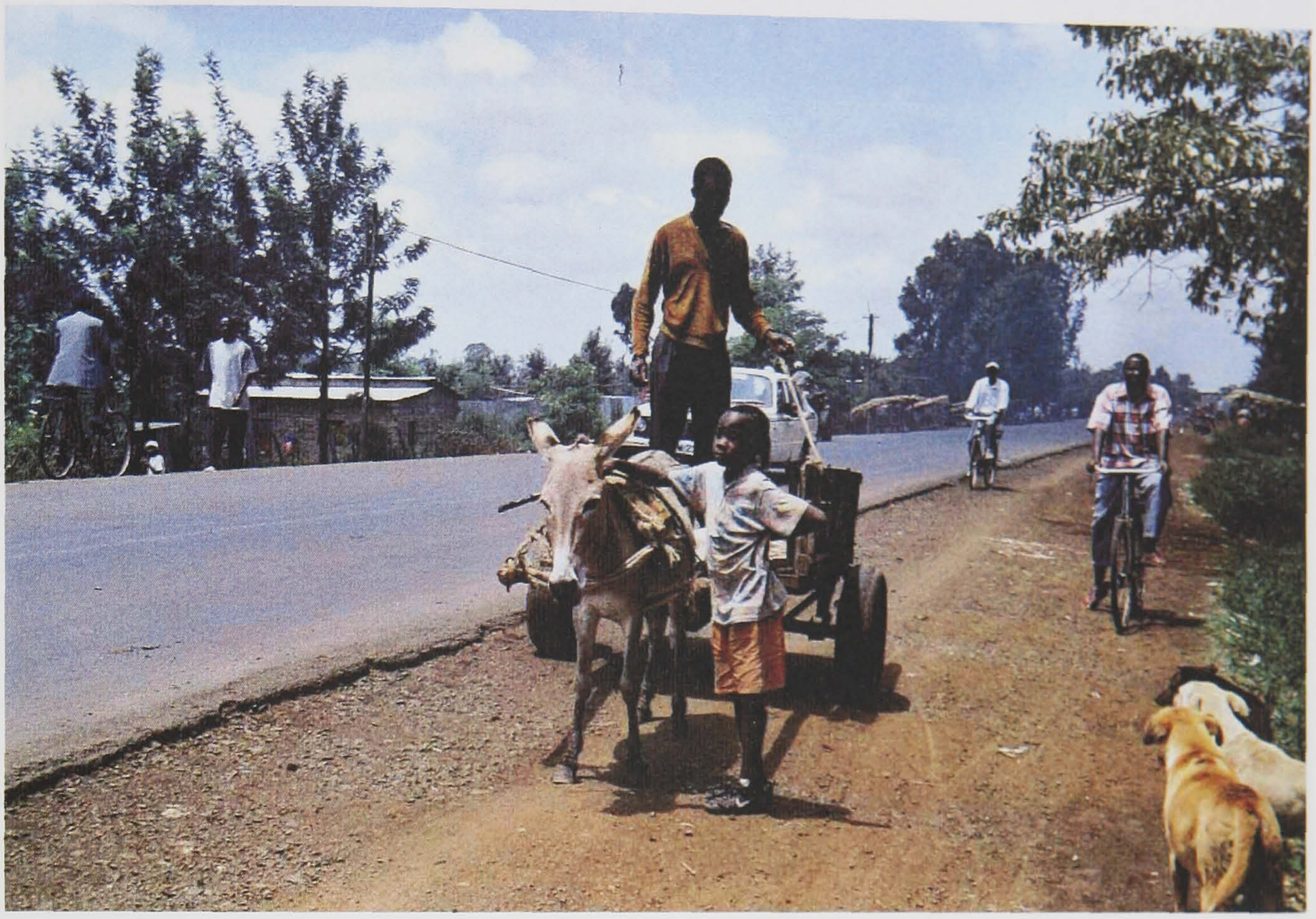
Plate C5: Reconstruction of feeder road in Copperbelt Province, Zambia

Plate C6: Wooden bridge structure in Southwest Province, Cameroon

Plate C7: Transit of firewood in a pushtruck, Adamaoua Province, Cameroon

Plate C8: Modified transport service vehicle, Southwest Province, Cameroon

Plate C9: Donkey cart, Lari Division, Kenya



Place C10: Nguka taxis self-help group, Mwea Division, Kenya

Plate C11: Traveling on foot (headloading), Magadi Division, Kenya